FILE COPY

Deliverable Review Form

1 ***Project Information:***

Project Name: Olin Chemical Superfund Site

Project Number: 6107-11-0016 Project Manager: Peter Thompson

Document Name: Data Validation Report - August 2011 Slurry Wall / Cap

Document Revision Number: _____ Revision Date: _____

Prepared By: _____

2 ***Technical Review:*** This document has been independently reviewed for technical adequacy, validity, feasibility, continuity, and conformance to client requirements and accepted professional standards. Technical review of this document has been performed by:

Subject Area(s): Initial Data Validation

Printed Name: Wolfgang Calicchio

Signature: [signature] Date: 10/14/11

Subject Area(s): Senior Data Validation

Printed Name: Chris Ricciuti

Signature: [signature] Date: 10/14/11

Subject Area(s): QC Review

Printed Name: Kelly Chatterton

Signature: [signature] Date: 11/14/11

3 ***Tables/Figures/Appendices (including calculations) Review:*** Independently reviewed for technical adequacy, continuity, and conformance to regulatory requirements and accepted professional standards (use back of form if more room is needed). Reviews performed by:

List of reviewed Tables/Figures/Appendices: Table 1 - Sample Summary

Created by: kjc KJC 09/16/11 Checked by: [signature] Date: 9/21/11

List of reviewed Tables/Figures/Appendices: Table 2 - Final Results Summary

Created by: kjc 9/22/11 Checked by: [signature] Date: 10/14/11

List of reviewed Tables/Figures/Appendices: Table 3 - Validation Qualification Action Summary

Created by: kjc 9/22/11 Checked by: [signature] Date: 10/14/11

List of reviewed Tables/Figures/Appendices: _____

Created by: _____ Checked by: _____ Date: _____

4 ***Certifying Project Manager:*** I certify that this document has been reviewed and edited prior to release and is in conformance with the company's standards for technical and document quality:

Print Name: Peter Thompson

Signature: _____ Date: _____

5 ***Certifying Project Principal:*** I certify that this document has been reviewed and edited prior to release and is in conformance with the company's standards for technical and document quality:

Print Name: Michael Murphy

Signature: [signature] Date: 10/17/11

6 *Policy ES-4* ***Contract Requirements: Contract = Contract, Subcontract, Work Order, Change Order, or PO***

- [ ] NA
- [ ] This is a Standard Contract
- [ ] This is a Non-Standard Contract * and was checked & stamped by an OCA or MACTEC Attorney

* Client-generated contracts and/or any mods to PWAS/other standard company contracts shall be reviewed by an OCA. See Policies LD-6, LD-7 and LD-30 for more information.

All Contracts - Client must sign two copies of the contract first, then return them to MACTEC for our signature on both copies. MACTEC returns one signed contract to Client, and stamps one File Copy for MACTEC's project files.)

Back of form to be completed by Annette\Project Assistant.

Deliverable Review Form (Continued)

Sections 7-9 to be Completed by Annette\Project Assistant

7 ***Copy Editing:*** This document has been checked to ensure correct spelling, grammar, and word usage; completeness (no missing text, figures, tables); accuracy (index, page numbers, internal references); continuity of style; and conformance to specified format and style requirements (whether MACTEC format or client requested format). Copy editing of this document was performed by:

Print Name: Annette Savastano

Signature: Annette Savastano Date: 10/17/11

8 ***Policy ES-4 Requirements (Proposals, Reports & Other Client Deliverables):*** **Check all that apply below.**

	MACTEC's copy is a "duplicate original" of the client's original and is stamped "File Copy"
	This is a Draft - Transmittal signed by Principal is attached to Client's & MACTEC's File Copy
X	This is a Final - Project Manager & Principal wet signatures on Client's & MACTEC's File Copy
X	And all Tables/Figures/Appendices have wet initials for Reviewed By/Checked By per QA Policy
	This is a PDF electronic delivery sent via email. A printout of the deliverable that was sent to client and a copy of the transmittal email sent to the client is attached to the printout and stamped File Copy
	If Absentee Signature was used - Approval from absentee is attached to File Copy (see policy update below). Absentee Signature Policy Update - The authorized employee should sign their own name and the phrase "for _____ with permission." Documentation of permission to sign must be included with File Copy.

9 ***Timeliness Database:*** [X] NA

Original Deliverable Due Date: _____ Actual Delivery Date: _____

Variance Explanation (if applicable): _____

10 ***Use this space for any additional notes/comments/signatures:***

AMEC Environment & Infrastructure

107 Audubon Road, Building 2, Suite 301
Wakefield, Massachusetts 01880
Phone No.: (781) 245-6606
FAX No. : (781) 246-5060

TRANSMITTAL LETTER

To: James Cashwell	Date: October 20, 2011
Olin Corporation	Client: Olin
3855 North Ocoee Street	Project: 51 Eames Street, Wilmington, MA
Suite 200	
Cleveland, Tennessee 37312	AMEC PN: 6107-11-0016.12
	Delivery: U.S.P.S.

☒ information ☐ purchasing
☐ estimating ☐ construction
☐ comments and/or approval ☐ see remarks

REMARKS: Enclosed please find the following data validation summary report (on CD) for the 51 Eames Street, Wilmington, MA property.

Please feel free to contact Mike Murphy at (781) 245-6606 if you have any questions regarding the enclosed report.

Prepared By: Annette Savastano AMS

Number	Revision No.	No. of Copies	Title or Description
1	-	1	Data Validation Report, August 2011 Slurry Wall Groundwater and Surface Water, Olin Chemical Superfund Site, Wilmington, Massachusetts, TestAmerica Laboratories Data Sets: 360-35962-1 and 360-35898-1

DISTRIBUTION: T = TRANSMITTAL LETTER; C = COPY OF DOCUMENT

	T	C		T	C	
Brian Guichard, Olin Wilmington (CD)	X	X				
AMEC Project File	X	X				

To: James Cashwell
From: Chris Ricardi
Date: October 17, 2011
Subject: Interim Response Steps Work Plan Slurry Wall Monitoring Program 3Q11– August 2011

DATA VALIDATION REPORT
AUGUST 2011 SLURRY WALL GROUNDWATER AND SURFACE WATER
OLIN CHEMICAL SUPERFUND SITE
WILMINGTON, MASSACHUSETTS
TestAmerica Laboratories Data Sets 360-35962-1 and 360-35898-1

1.0 INTRODUCTION

Groundwater and surface water samples were collected from the Olin Chemical Superfund Site from August 23 – 25, 2011. Samples were analyzed by TestAmerica Laboratories in Westfield, Massachusetts. Data were reported in sample delivery groups (SDGs) 360-35962-1 and 360-35898-1. A summary of samples included in this review is contained in Table 1. Samples reviewed in this report were analyzed for the following USEPA SW-846 (USEPA, 1996), USEPA wastewater (USEPA, 1993), or Standard Methods (APHA, 1995):

- dissolved metals (aluminum and chromium) by USEPA Method 6010B in groundwater
- dissolved and total metals (aluminum, chromium, and sodium) by USEPA Method 6010B in surface water
- general chemistry analyses for ammonia by USEPA Method 350.1 (Lachat 10-107-06-1), chloride, nitrate, nitrite, and sulfate by USEPA Method 300, and specific conductance by SM 2510B

The Final Interim Response Steps Work Plan (MACTEC, 2007) and the MassDEP Compendium of Quality Assurance and Quality Control Requirements and Performance Standards for Selected Analytical Methods Used in Support of Response Actions for the Massachusetts Contingency Plan (MCP) [MassDEP, 2010] were used as references during the review. Analytical packages were reviewed using the Level 1 Data Quality Evaluation checklists that were developed for the Olin Wilmington monitoring tasks. Final sample results are presented on data summaries in Table 2. A summary of validation qualification actions is presented on Table 3 for results that were qualified. Validation reason codes are associated with final results that have been qualified as indicated in Table 3.

2.0 METALS

Data were reviewed for the following parameters:

Environment & Infrastructure
107 Audubon Road, Suite 301 • Wakefield, MA 01880 USA
Tel: 781.245.6606 • Fax: 781.246.5060

* Data Completeness
* Holding Time
  Blanks
* Laboratory Control Sample/Laboratory Control Sample Duplicate Analysis
* Matrix Spike Analysis
* Field Duplicate Results
* Detection Limits
  Dissolved vs. Total Metals Comparison

***** = indicates that criteria were met for this parameter

Blanks

SDG 360-35898-1

Sodium (355 µg/L) was reported in the dissolved method blank associated with samples in SDG 360-35898-1. An action level was established at five times the reported method blank dissolved sodium concentration. All dissolved sodium sample results were greater than the action level and no qualification action was required.

Dissolved vs. Total Metals Comparison

Dissolved sodium concentrations were over ten percent greater than total sodium concentrations in a subset of surface water samples in SDG 360-32829-1 as presented in the table below. The results for total and dissolved sodium in these samples were qualified estimated J.

SDG	fraction	lab_sample_id	field_sample_id	Sodium result (µg/L)	% Dissolved amount is greater than Total amount	Final Qualifier
360-35898-1	Dissolved	360-35898-1	OC-SW-ISCO1	90000	23	J
360-35898-1	Total	360-35898-1	OC-SW-ISCO1	73000		J
360-35898-1	Dissolved	360-35898-2	OC-SW-ISCO2	190000	27	J
360-35898-1	Total	360-35898-2	OC-SW-ISCO2	150000		J
360-35898-1	Dissolved	360-35898-3	OC-SW-ISCO3	99000	21	J
360-35898-1	Total	360-35898-3	OC-SW-ISCO3	82000		J
360-35898-1	Dissolved	360-35898-4	OC-SW-PZ-16RRSW	200000	25	J
360-35898-1	Total	360-35898-4	OC-SW-PZ-16RRSW	160000		J

SDG	fraction	lab_sample_id	field_sample_id	Sodium result (µg/L)	% Dissolved amount is greater than Total amount	Final Qualifier
360-35898-1	Dissolved	360-35898-5	OC-SW-PZ-17RRSW	190000	19	J
360-35898-1	Total	360-35898-5	OC-SW-PZ-17RRSW	160000		J
360-35898-1	Dissolved	360-35898-6	OC-SW-PZ-18RSW	89000	33	J
360-35898-1	Total	360-35898-6	OC-SW-PZ-18RSW	67000		J
360-35898-1	Dissolved	360-35898-7	OC-SW-SD-17	140000	46	J
360-35898-1	Total	360-35898-7	OC-SW-SD-17	96000		J

3.0 GENERAL CHEMISTRY – Ammonia, Chloride, Sulfate, Nitrate, Nitrite, and Specific Conductance

Data were reviewed for the following parameters:

* Data Completeness
* Holding Time
* Blanks
* Matrix Spike Analysis
* Field Duplicate Analysis
* Laboratory Duplicate Analysis
* Laboratory Control Sample/Laboratory Control Sample Duplicate Analysis
  Detection Limits

***** = indicates that criteria were met for this parameter

Except for the validation actions noted above, the results are interpreted to be usable as reported by TestAmerica.

Detection Limits

SDGs 360-35898-1

The case narrative states that due to chloride co-elution, samples OC-SW-ISCO1, OC-SW-ISCO2, OC-SW-ISCO3, OC-SW- PZ-16RRSW, OC-SW- PZ-16RRSW, and OC-SW- SD-7 were analyzed at ten-fold dilution. Nitrite reporting limits were elevated accordingly.

Chris Ricardi, NRCC-EAC
Senior Chemist

10/17/2011
Date

Michael Murphy
Project Principal

10/17/11
Date

References:

American Public Health Association (APHA), 1995. "Standard Methods for Examination of Water and Wastewater"; 19th Edition; APHA, 1015 Fifteenth St., NW., Washington, D.C. 20005.

MACTEC Engineering and Consulting, Inc. (MACTEC), 2007. "Final Interim Response Steps Work Plan"; Olin Chemical Superfund Site; 51 Eames Street, Wilmington, Massachusetts; August 8, 2007.

Massachusetts Department of Environmental Protection (MassDEP), 2010. "The Compendium of Quality Assurance and Quality Control Requirements and Performance Standards for Selected Analytical Methods Used in Support of Response Actions for the Massachusetts Contingency Plan (MCP)"; Bureau of Waste Site Cleanup; 1 Winter Street, Boston, Massachusetts 02108; WSC-CAM; July 2010.

U.S. Environmental Protection Agency (USEPA), 1993. "Methods for Chemical Analysis and Water and Wastes (MCAWW)", EPA/600/4-79-020 (March 1983) with updates and supplements EPA/600/4-91-010 (June 1991), EPA/600/R-92-129 (August 1992) and EPA/600/R-93-100 (August 1993).

USEPA, 1996. "Test Methods for Evaluating Solid Waste"; Laboratory Manual Physical/Chemical Methods; Office of Solid Waste and Emergency Response; Washington, DC; SW-846; November 1986; Revision 4 -December 1996.

Table 1
Sample Summary
Data Validation Report
August 2011 Slurry Wall / Cap Groundwater and Surface Water
Olin Chemical Superfund Site
Wilmington, Massachusetts

Lab Sample ID	Location	Sample ID	Sample Date	SW846 6010B Total	SW846 6010B Filtered	E350.1 (QuickChem 10-107-06-1-B)	A2510B	40CFR136A 300.0
Groundwater								
360-35962-1	GW-202S	OC-GW-202S	8/24/2011		2	1	1	2
360-35962-2	GW-202D	OC-GW-202D	8/24/2011		2	1	1	2
360-35962-3	GW-25	OC-GW-25	8/25/2011		2	1	1	2
360-35962-4	GW-78S	OC-GW-78S	8/24/2011		2	1	1	2
360-35962-5	GW-79S	OC-GW-79S	8/24/2011		2	1	1	2
360-35962-6	PZ-16RR	OC-PZ-16RR	8/24/2011		2	1	1	2
360-35962-7	PZ-17RR	OC-PZ-17RR	8/24/2011		2	1	1	2
360-35962-8	PZ-18R	OC-PZ-18R	8/25/2011		2	1	1	2
360-35962-9	PZ-24	OC-PZ-24	8/25/2011		2	1	1	2
360-35962-10	PZ-25	OC-PZ-25	8/25/2011		2	1	1	2
Surface Water								
360-35898-1	ISCO1	OC-SW-ISCO1	8/23/2011	3	3	1	1	4
360-35898-2	ISCO2	OC-SW-ISCO2	8/23/2011	3	3	1	1	4
360-35898-3	ISCO3	OC-SW-ISCO3	8/23/2011	3	3	1	1	4
360-35898-4	PZ-16RR	OC-SW-PZ-16RRSW	8/23/2011	3	3	1	1	4
360-35898-5	PZ-17RR	OC-SW-PZ-17RRSW	8/23/2011	3	3	1	1	4
360-35898-6	PZ-18R	OC-SW-PZ-18RSW	8/23/2011	3	3	1	1	4
360-35898-7	SD-17	OC-SW-SD-17	8/23/2011	3	3	1	1	4

Notes:
Number listed under method indicates number of target analytes reported.

Prepared by / Date: KJC 09/16/11
Checked by / Date: WDC 09/21/11

Table 2
Final Results Summary
Data Validation Report
August 2011 Slurry Wall / Cap Groundwater and Surface Water
Olin Chemical Superfund Site
Wilmington, Massachusetts

			Loc Name	GW-202D		GW-202S		GW-25		GW-78S		GW-79S		PZ-16RR		PZ-17RR	
			Field Sample ID	OC-GW-202D		OC-GW-202S		OC-GW-25		OC-GW-78S		OC-GW-79S		OC-PZ-16RR		OC-PZ-17RR	
			Field Sample Date	08/24/11		08/24/11		08/25/11		08/24/11		08/24/11		08/24/11		08/24/11	
			QC Code	FS		FS		FS		FS		FS		FS		FS	
			Lab Sample Delivery Group	360-35962-1		360-35962-1		360-35962-1		360-35962-1		360-35962-1		360-35962-1		360-35962-1	
Frac	**Method**	**Analyte**	**Units**	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual
F	SW6010	Aluminum	ug/l	12000		100	U	100	U	55	J	100	U	100	U	22	J
F	SW6010	Chromium	ug/l	930		4.4	J	1.8	J	14		19		5.4		11	
N	E300	Chloride	mg/l	310		60		100		23		190		220		23	
N	E300	Sulfate	mg/l	1900		380		91		430		1000		720		440	
N	LACH_107_06_1_B	Nitrogen, as Ammonia	mg/l	190		62		39		39		97		160		32	
N	A2510B	LAB SPECIFIC CONDUCTANC	umhos/cm	4800		1300		760		1200		3000		3000		1400	

Notes:

N = normal

F = filtered

FS = field sample

U = not detected, value is the detection limit

J = value is estimated

ug/l = microgram per liter

mg/l = milligram per liter

umhos/cm = micro reciprocal ohms per centimeter

Table 2
Final Results Summary
Data Validation Report
August 2011 Slurry Wall / Cap Groundwater and Surface Water
Olin Chemical Superfund Site
Wilmington, Massachusetts

			Loc Name	PZ-18R		PZ-24		PZ-25	
			Field Sample ID	OC-PZ-18R		OC-PZ-24		OC-PZ-25	
			Field Sample Date	08/25/11		08/25/11		08/25/11	
			QC Code	FS		FS		FS	
			Lab Sample Delivery Group	360-35962-1		360-35962-1		360-35962-1	
Frac	**Method**	**Analyte**	**Units**	Result	Qual	Result	Qual	Result	Qual
F	SW6010	Aluminum	ug/l	100	U	15	J	100	U
F	SW6010	Chromium	ug/l	12		21		9.3	
N	E300	Chloride	mg/l	110		23		22	
N	E300	Sulfate	mg/l	60		710		420	
N	LACH_107_06_1_B	Nitrogen, as Ammonia	mg/l	33		61		43	
N	A2510B	LAB SPECIFIC CONDUCTANCI	umhos/cm	810		2000		1400	

Notes:

N = normal

F = filtered

FS = field sample

U = not detected, value is the detection limit

J = value is estimated

ug/l = microgram per liter

mg/l = milligram per liter

umhos/cm = micro reciprocal ohms per centimeter

Prepared by / Date: KJC 09/22/11

Checked by / Date: WDC 09/26/11

Table 2
Final Results Summary
Data Validation Report
August Slurry Wall / Cap Groundwater and Surface Water
Olin Chemical Superfund Site
Wilmington, Massachusetts

			Loc Name	ISCO1		ISCO2		ISCO3		PZ-16RR		PZ-17RR		PZ-18R		SD-17	
			Field Sample ID	OC-SW-ISCO1		OC-SW-ISCO2		OC-SW-ISCO3		OC-SW-PZ-16RRSW		OC-SW-PZ-17RRSW		OC-SW-PZ-18RSW		OC-SW-SD-17	
			Field Sample Date	08/23/11		08/23/11		08/23/11		08/23/11		08/23/11		08/23/11		08/23/11	
			QC Code	FS		FS		FS		FS		FS		FS		FS	
			Lab Sample Delivery Group	360-35898-1		360-35898-1		360-35898-1		360-35898-1		360-35898-1		360-35898-1		360-35898-1	
Frac	**Method**	**Analyte**	**Units**	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual
F	SW6010	Aluminum	ug/l	40	J	36	J	100	U	1500		1400		36	J	920	
F	SW6010	Chromium	ug/l	8.6		13		5	U	490		600		8.2		280	
F	SW6010	Sodium	ug/l	90000	J	190000	J	99000	J	200000	J	190000	J	89000	J	140000	J
N	E300	Chloride	mg/l	110		170		200		190		190		110		130	
N	E300	Nitrate as N	mg/l	0.08		0.79		0.7		0.39		0.18		0.078		0.16	
N	A4500_NO2_B	Nitrite as N	mg/l	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.01	U	0.1	U
N	E300	Sulfate	mg/l	130		580		22		620		600		130		240	
N	LACH_107_06_1_B	Nitrogen, as Ammonia	mg/l	37		98		1.7		110		110		33		41	
N	A2510B	LAB SPECIFIC CONDUCTANCE	umhos/cm	790		2200		800		2300		2200		790		1100	
T	SW6010	Aluminum	ug/l	150		230		53	J	1900		5700		140		1200	
T	SW6010	Chromium	ug/l	16		51		1.2	J	560		1300		15		280	
T	SW6010	Sodium	ug/l	73000	J	150000	J	82000	J	160000	J	160000	J	67000	J	96000	J

Notes:

N = normal

T = total (unfiltered)

F = filtered

FS = field sample

U = not detected, value is the detection limit

J = value is estimated

ug/l = microgram per liter

mg/l = milligram per liter

umhos/cm = micro reciprocal ohms per centimeter

Prepared by / Date: KJC 09/22/11

Checked by / Date: WDC 09/26/11

Table 3
Validation Qualification Action Summary
Data Validation Report
August 2011 Slurry Wall / Cap Groundwater and Surface Water
Olin Chemical Superfund Site
Wilmington, Massachusetts

SDG	Lab Sample ID	Analytical Method	Fraction	Field Sample ID	Parameter	Lab Result	Lab Qualifier	Final Result	Final Qualifier	Val Reason Code	Units
360-35898-1	360-35898-1	SW6010	D	OC-SW-ISCO1	Sodium	90000	B	90000	J	TD	ug/l
360-35898-1	360-35898-1	SW6010	T	OC-SW-ISCO1	Sodium	73000		73000	J	TD	ug/l
360-35898-1	360-35898-2	SW6010	D	OC-SW-ISCO2	Sodium	190000	B	190000	J	TD	ug/l
360-35898-1	360-35898-2	SW6010	T	OC-SW-ISCO2	Sodium	150000		150000	J	TD	ug/l
360-35898-1	360-35898-3	SW6010	T	OC-SW-ISCO3	Sodium	82000		82000	J	TD	ug/l
360-35898-1	360-35898-3	SW6010	D	OC-SW-ISCO3	Sodium	99000	B	99000	J	TD	ug/l
360-35898-1	360-35898-4	SW6010	T	OC-SW-PZ-16RRSW	Sodium	160000		160000	J	TD	ug/l
360-35898-1	360-35898-4	SW6010	D	OC-SW-PZ-16RRSW	Sodium	200000	B	200000	J	TD	ug/l
360-35898-1	360-35898-5	SW6010	T	OC-SW-PZ-17RRSW	Sodium	160000		160000	J	TD	ug/l
360-35898-1	360-35898-5	SW6010	D	OC-SW-PZ-17RRSW	Sodium	190000	B	190000	J	TD	ug/l
360-35898-1	360-35898-6	SW6010	T	OC-SW-PZ-18RSW	Sodium	67000		67000	J	TD	ug/l
360-35898-1	360-35898-6	SW6010	D	OC-SW-PZ-18RSW	Sodium	89000	B	89000	J	TD	ug/l
360-35898-1	360-35898-7	SW6010	T	OC-SW-SD-17	Sodium	96000		96000	J	TD	ug/l
360-35898-1	360-35898-7	SW6010	D	OC-SW-SD-17	Sodium	140000	B	140000	J	TD	ug/l

Units:
ug/L = microgram per liter

Validation Reason Codes:
TD = Dissolved concentration exceeds total

Prepared by / Date: KJC 09/22/11
Checked by / Date: WDC 09/26/11

Validation Qualifier:
U = Not detected, value is the detection limit
J = Value is estimated

Version 1.2, Nov 2002

OLIN-WILMINGTON
LEVEL I DATA QUALITY EVALUATION
STANDARD OPERATING PROCEDURE AND CHECKLIST
ICP METALS BY METHOD 6010B/200.7

Reviewer/Date 9/21/11
Sr. Review/Date Chris Ricardi 10/14/11
Lab Report # 360-35898-1
Project # 6107110016.12

total and dissolved aluminum, chromium, sodium

1.0 Laboratory Deliverable Requirements

1.1 Laboratory Information: Was all of the following provided in the laboratory report? **Yes** [✓] No [ ] N/A [ ] Comments:
Check items received.

☑ *Name of Laboratory* ☑ *Address* ☑ *Project ID* ☐ *Phone #* ☐ *Sample identification – Field and Laboratory*
Client Information: ☑ *Name* ☐ *Address* ☑ *Client Contact* *(IDs must be cross-referenced)*

ACTION: If no, contact lab for submission of missing or illegible information.

1.2 Laboratory Report Certification Statement ***Yes*** [✓] *No* [ ] *N/A* [ ] *Comments:*

Does the laboratory report include a completed Analytical Report Certification in the required format?

***ACTION**: If no, contact lab for submission of missing certification or certification with correct format.*

1.3 Laboratory Case Narrative: ***Yes*** [✓] *No* [ ] *N/A* [ ] *Comments:*

☑ *Narrative serves as an exception report for the project and method QA/QC performance.* ☐ *Narrative includes an explanation of each discrepancy on the*

Certification Statement.

***ACTION**: If no, contact lab for submission of missing or illegible information.*

1.4 Chain of Custody (COC) copy present with all documentation completed **Yes** [✓] No [ ] N/A [ ] Comments:

NOTE: Olin receives and maintains the *original COC.*

ACTION: If no, contact lab for submission of copy of completed *COC.*

1.5 Sample Receipt Information (*Cooler Receipt Form present?*): **Yes** [✓] No [ ] N/A [ ] Comments:

Were each of the following tasks completed and recorded upon receipt of the sample(s) into the laboratory?

☑ Sample temperature confirmed: must be 1° – 10° C. (If samples were sent by courier and delivered on the same day as collection, temperature requirement does not apply).

☑ Container type noted ☑ sample condition observed ☑ pH verified (where applicable) ☑ Field and lab IDs cross referenced

ACTION: If no, contact lab for submission of missing or incomplete documentation.

1.5.1 Were all samples delivered to the laboratory without breakage? **Yes** [✓] No [ ] N/A [ ] Comments:

1.5.2 Does the *Cooler Receipt Form* or Lab Narrative indicate other problems with sample receipt, condition of the samples, analytical problems or special circumstances affecting the quality of the data? Yes [ ] **No** [✓] N/A [ ] Comments:

1.6 Sample Results Section: *Was each of the following requirements supplied in the laboratory report for each sample?* **Yes** [✓] No [ ] N/A [ ] Comments:

☑ Field ID and Lab ID ☑ *Date and time collected* ☑ Analyst Initials ☑ *Dilution Factor* ☑ % moisture or solids ☑ *Reporting limits*
☑ *Clean-up method* ☑ Analysis method ☑ *Preparation method* ☑ *Date of preparation/extraction/digestion clean-up and analysis, where applicable*
☑ Matrix ☑ Target analytes and concentrations ☑ Units (soils must be reported in dry weight)

ACTION: If no, contact lab for submission of missing or incomplete information.

1.7 QA/QC Information: Was each of the following information supplied in the laboratory report for each sample batch? **Yes** [✓] No [ ] N/A [ ] Comments:

OLIN CORPORATION
LEVEL I DATA QUALITY EVALUATION – OPTION 1
STANDARD OPERATING PROCEDURE AND CHECKLIST
ICP METALS BY METHOD 6010B/200.7

☑ Method blank results ☑ LCS recoveries ☑ MS/MSD recoveries and RPDs ☑ Laboratory duplicate results (where applicable)

ACTION: If no, contact lab for submission of missing or incomplete information.

2.0 Holding Times

Have any technical holding times, determined from date of collection to date of analysis, been exceeded? Holding time for metals is 180 days from sample collection to analysis for both water and soil.

Yes [ ] **No [✓]** N/A [ ] Comments:

NOTE: List samples that exceed hold time with # of days exceeded on checklist

ACTION: If technical holding times are exceeded, qualify all positive results (J) and non-detects (UJ). If grossly exceeded (2X holding time) reject (R) all non-detect results.

3.0 Laboratory Method

3.1 Was the correct laboratory method used?

Yes [✓] No [ ] N/A [ ] Comments:

Water Digestion	3005A or 3010A or 3020A
Soil Digestion	3050B
Metals	6010B or 200.7

ACTION: If no, contact laboratory to provide justification for method change compared to the requested method. Contact senior chemist to inform Client of change and to request variance.

3.2 Are the practical quantitation limits the same as those specified by the ☐ SOW ☑ QAPP ☐ Lab ☐ MADEP

Yes [✓] No [ ] N/A [ ] Comments:

NOTE: *Verify that the reported metals match the target list specified on the COC.*

ACTION: If no, evaluate variation with respect to sample matrix, preparation, dilution, moisture, etc. If sample PQL is indeterminate, contact lab for explanation.

3.3 Are results present for each sample in the SDG? **Yes** [✓] No [ ] N/A [ ] Comments:

ACTION: If no, check Request for Analysis to verify if method was ordered and COC to verify that it was sent, and contact lab for resubmission of the missing data

3.4 If dilutions were required, were dilution factors reported? **Yes** [✓] No [ ] N/A [ ] Comments:

ACTION: If no, contact the lab for submission.

4.0 Method Blanks

4.1 Is the Method Blank Summary present? **Yes** [✓] No [ ] N/A [ ] Comments:

ACTION: If no, call the laboratory for submission of missing data.

4.2 Frequency of Analysis: Was a method blank analyzed for each digestion batch of < 20 field samples? **Yes** [✓] No [ ] N/A [ ] Comments:

ACTION: If no, contact laboratory for justification. Consult senior chemist for action needed. Narrate non-compliance.

4.3 Is the method blank less than the PQLs for all target elements? **Yes** [✓] No [ ] N/A [ ] Comments:

NOTE: *MADEP requires the method blank to be matrix matched and digested with the samples*

4.4 Do any method blanks have positive results for metals? Qualify data according to the following: Yes [✓] **No** [ ] N/A [ ] Comments:

Sodium (355 ug/L) was reported in the dissolved method blank. Action level established at five times the blank concentration. Dissolved sodium results are greater than action level; no qualification was required. 4 of 10

Client: Olin Corporation

Job Number: 360-35898-1

Method Blank - Batch: 360-79397

Method: 6010B
Preparation: N/A

Lab Sample ID:	MB 360-79397/2	Analysis Batch:	360-79397	Instrument ID:	Varian ICP
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	090111b.csv
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.0 mL
Analysis Date:	09/01/2011 1211	Units:	ug/L	Final Weight/Volume:	1.0 mL
Prep Date:	N/A				
Leach Date:	N/A				

Analyte	Result	Qual	MDL	RL
Aluminum	ND		13	100
Chromium	ND		0.65	5.0
Sodium	355	J	280	2000

Lab Control Sample/
Lab Control Sample Duplicate Recovery Report - Batch: 360-79397

Method: 6010B
Preparation: N/A

LCS Lab Sample ID:	LCS 360-79397/1	Analysis Batch:	360-79397	Instrument ID:	Varian ICP
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	090111b.csv
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.0 mL
Analysis Date:	09/01/2011 1209	Units:	ug/L	Final Weight/Volume:	10 mL
Prep Date:	N/A				
Leach Date:	N/A				

LCSD Lab Sample ID:	LCSD 360-79397/8	Analysis Batch:	360-79397	Instrument ID:	Varian ICP
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	090111b.csv
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.0 mL
Analysis Date:	09/01/2011 1402	Units:	ug/L	Final Weight/Volume:	10 mL
Prep Date:	N/A				
Leach Date:	N/A				

	% Rec.						
Analyte	LCS	LCSD	Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
Aluminum	99	103	80 - 120	3	20		
Chromium	98	101	80 - 120	4	20		
Sodium	94	97	80 - 120	3	20		

Client: Olin Corporation

Job Number: 360-35898-1

QC Association Summary

Lab Sample ID	Client Sample ID	Report Basis	Client Matrix	Method	Prep Batch
Metals					
Prep Batch: 360-78938					
LCS 360-78938/2-A	Lab Control Sample	T	Water	3010A	
LCSD 360-78938/3-A	Lab Control Sample Duplicate	T	Water	3010A	
MB 360-78938/1-A	Method Blank	T	Water	3010A	
360-35898-1	OC-SW-ISCO1	T	Water	3010A	
360-35898-2	OC-SW-ISCO2	T	Water	3010A	
360-35898-3	OC-SW-ISCO3	T	Water	3010A	
360-35898-4	OC-SW-PZ-16RRSW	T	Water	3010A	
360-35898-5	OC-SW-PZ-17RRSW	T	Water	3010A	
360-35898-6	OC-SW-PZ-18RSW	T	Water	3010A	
360-35898-7	OC-SW-SD-17	T	Water	3010A	
Analysis Batch:360-79049					
LCS 360-78938/2-A	Lab Control Sample	T	Water	6010B	360-78938
LCSD 360-78938/3-A	Lab Control Sample Duplicate	T	Water	6010B	360-78938
MB 360-78938/1-A	Method Blank	T	Water	6010B	360-78938
360-35898-1	OC-SW-ISCO1	T	Water	6010B	360-78938
360-35898-2	OC-SW-ISCO2	T	Water	6010B	360-78938
360-35898-3	OC-SW-ISCO3	T	Water	6010B	360-78938
360-35898-4	OC-SW-PZ-16RRSW	T	Water	6010B	360-78938
360-35898-5	OC-SW-PZ-17RRSW	T	Water	6010B	360-78938
360-35898-6	OC-SW-PZ-18RSW	T	Water	6010B	360-78938
360-35898-7	OC-SW-SD-17	T	Water	6010B	360-78938
Analysis Batch:360-79397					
LCS 360-79397/1	Lab Control Sample	T	Water	6010B	
LCSD 360-79397/8	Lab Control Sample Duplicate	T	Water	6010B	
MB 360-79397/2	Method Blank	T	Water	6010B	
360-35898-1	OC-SW-ISCO1	D	Water	6010B	
360-35898-1DU	Duplicate	D	Water	6010B	
360-35898-1MS	Matrix Spike	D	Water	6010B	
360-35898-2	OC-SW-ISCO2	D	Water	6010B	
360-35898-3	OC-SW-ISCO3	D	Water	6010B	
360-35898-4	OC-SW-PZ-16RRSW	D	Water	6010B	
360-35898-5	OC-SW-PZ-17RRSW	D	Water	6010B	
360-35898-6	OC-SW-PZ-18RSW	D	Water	6010B	
360-35898-7	OC-SW-SD-17	D	Water	6010B	

Report Basis
D = Dissolved
T = Total

If the sample concentration is < 5 × blank value, flag sample result non-detect "U" at the PQL or the concentration reported if greater than the PQL.

If the sample concentration is > 5 × blank value, no qualification is needed.

ACTION: For any blank with positive results, list all contaminants for each method blank including the concentration detected and the flagging level (flagging level = 5x the blank value) and the associated samples and qualifiers.

5.0 Laboratory Control Standard

5.1 Was a laboratory control standard run with each analytical batch of 20 samples or less?

Yes [✓] No [ ] N/A [ ] Comments:

NOTE: *A full target, second source LCS is required by MADEP.*
ACTION: Call laboratory for LCS form submittal. If data are not available, use professional judgement to evaluate data accuracy associated with that batch.

5.2 Is a LCS Summary Form present?

Yes [✓] No [ ] N/A [ ] Comments:

ACTION: If no, contact lab for resubmission of missing data.

5.3 Is the recovery of any analyte outside of MADEP control limits?

Yes [ ] **No [✓]** N/A [ ] Comments:

Sample Type	MADEP % Rec
Water	80-120
Soil	within Lab generated limits

ACTION: If recovery is above the upper limit, qualify all positive sample results within the batch as (J). If recovery is below the lower limit, qualify all positive and non-detects results within the batch as (J). If LCS recovery is <30%, positive and non-detect results are rejected (R).

Comments:

6.0 Matrix Spikes

Matrix spikes may be collected at different frequencies based on monthly, quarterly, or task specific schedules. Confirm spike requirements for each set with the senior chemist.

6.1 Were project-specific MS/MSDs ~~collected~~ analyzed? List project samples that were spiked. @ 9/21/11

Yes [✓] No [ ] N/A [ ] Comments: OC-SW-ISC01.

ACTION: If no, contact senior chemist to see if any were specified.

6.2 Is the Matrix Spike/Matrix Spike Duplicate Recovery Form present?

Yes [✓] No [ ] N/A [ ] Comments:

NOTE: *A full target, second source MS/MSD is required by MADEP.*
ACTION: If any matrix spike data are missing, call lab for resubmission.

6.3 Were matrix spikes analyzed as indicated on the COC and project schedule?

Yes [✓] No [ ] N/A [ ] Comments:

ACTION: If any matrix spike data are missing, call lab for resubmission. If none, no qualification is needed. Narrate non-compliance.

6.4 Are any metal spike recoveries outside of the QC limits?

Yes [ ] No [✓] N/A [ ] Comments:

Sample Type	***MADEP*** ***% Rec***	QAPP % Rec	Method
Water	*75-125*	N/A	6010B
Water	*N/A*	70-130	200.7
Soil	*75-125*	75-125	6010B

NOTE: $\%R = \frac{(SSR-SR)}{SA} \times 100\%$ Where: SSR = Spiked sample result, SR = Sample result, SA = Spike added

NOTE: If dilutions are required due to high sample concentrations (> 4X spike), the data are evaluated, but no flags are applied.

NOTE: If only one of the recoveries for an MS/MSD pair is outside of the control limits, no qualification is necessary. Use professional judgment for the MS/MSD flags.

ACTION: MS/MSD flags only apply to the sample spiked. If the recoveries of the MS and MSD exceed the upper control limit, qualify positive results as estimated (J). If the recoveries of the MS and MSD are lower than the lower control limit, qualify positive results and non-detects (J).

6.5 Are any RPDs for MS/MSD recoveries outside of the QC limits? Yes [ ] **No** [ ] N/A [✓] Comments:

NOTE: $RPD = \frac{S-D}{(S+D)/2} \times 100\%$ Where: S = MS sample result
D = MSD sample result

NOTE: If dilutions are required due to high sample concentrations, the data are evaluated, but no flags are applied.

ACTION: If the RPD exceeds the control limit, qualify positive results and non-detects (J).

7.0 Laboratory Duplicate

7.1 Was a laboratory duplicate sample analyzed? If so, is the Laboratory Duplicate Sample Form present? **Yes** [✓] No [ ] N/A [ ] Comments:

NOTE: *MADEP refers to this sample as a "matrix duplicate".*

ACTION: If not analyzed, qualification is not needed. If data is missing, contact laboratory for resubmission of report. Narrate non-compliance.

7.2 Is the RPD between the result for the laboratory duplicate sample and the result for the parent sample outside of the QA/QC limits? Yes [ ] **No** [✓] N/A [ ] Comments:

MADEP Laboratory Duplicate Sample RPD Criteria:	QAPP RPD
For aqueous results > 5x RL, RPD must be ± 20%	20
For aqueous results < 5x RL, RPD must be ≤ RL	20
For soil/sediment results > 5x RL, RPD must be ± 35%	20
For soil/sediment results < 5x RL, RPD must be ≤ 2x RL	20

ACTION: If the RPD exceeds the limits, qualify both positive results and non-detects as estimated and flag them J. Narrate non-compliance

8.0 Sampling Accuracy

The majority of ground water samples are collected directly from a tap, process stream, or with dedicated tubing. Rinse blanks will not be collected.

8.1 Were rinsate blanks collected? Prior to evaluating rinsate blanks, obtain a list of the associated samples from the senior chemist.

Yes [ ] No [✓] N/A [ ] Comments:

8.2 Do any rinsate blanks have positive results?

Yes [ ] **No [ ]** N/A [✓] Comments:

***NOTE**: MADEP does not require the collection of rinsate blanks.*

ACTION: Evaluate rinsate results against blank results to determine if contaminant may be laboratory-derived. If results are not lab-related, qualify according to below.

If the sample concentration is < 5 × blank value, flag sample result non-detect "U" at the PQL or the concentration reported if greater than the PQL.

If the sample concentration is > 5 × blank value, no qualification is needed.

9.0 Field Duplicates

9.1 Were field duplicate samples collected? Obtain a list of samples and their associated field duplicates.

Yes [ ] **No [✓]** N/A [ ] Comments:

9.2 Were field duplicates collected per the required frequency? **Yes** [ ] No [ ] N/A [✓] Comments:

SOW ☐ QAPP *(1 per 10)* ☐ *MADEP Option 1 (1 per 20)* ☐ *MADEP Option 3 (1 per 10)* ☐

9.3 Was the RPD ≤ 50% for soils or waters? Calculate the RPD for all results and attach to this review. **Yes** [ ] No [ ] N/A [✓] Comments:

ACTION: RPD must be ≤50% for soil and water. Qualify data (J) for both sample results if the RPD exceeds 50%.

10.0 Special QA/QC

10.1 Were both total and dissolved metals analysis performed? If so, the dissolved metal concentration should not exceed that of the total metal. Yes [✓] **No** [ ] N/A [ ] Comments:

ACTION: If results for both total and dissolved are ≥ 5x the PQL **and** the dissolved concentration is 10% higher than the total, flag both results as estimated (J). If total and dissolved concentrations are less than 5x the PQL **and** the **difference** exceeds 2x the PQL, flag both results as estimated (J)

@ 9/6/14
~~Total~~ Dissolved sodium concentrations are greater than 10% higher than the total sodium results. Total and dissolved sodium results were qualified estimated (J).

10.0 Application of Validation Qualifiers

Was any of the data qualified? Yes [✓] No [__] N/A [__] Comments:

If so, apply data qualifiers directly to the DQE copy of laboratory report and **flag pages** for entry in database.

REFERENCES

LAW, 1999, "Final Quality Assurance Project Plan, Olin Wilmington Property, 51 Eames Street, Wilmington, MA", LAW Engineering and Environmental Services, Kennesaw, GA 30144. August 1999

U.S. Environmental Protection Agency (USEPA), 1989. "Region 1 Laboratory Data Validation Functional Guidelines For Evaluating Inorganic Analyses"; Hazardous Site Evaluation Division; February 1989.

MADEP, 2001. Massachusetts Department of Environmental Protection Bureau of Waste Site Cleanup, "Massachusetts Quality Assurance and Quality Control (QA/QC) Requirements." BWSC-CAM, Interim Final Draft, Revision No. 2, 5 October 2001.

MADEP, 2001. Massachusetts Department of Environmental Protection Bureau of Waste Site Cleanup, "Quality Assurance and Quality Control Guidelines for Sampling, Data Evaluation and Reporting Activities," BWSC-CAM, Section VII, Public Comment Draft, Revision No. 0, 21 December 2001.

Client: Olin Corporation

Job Number: 360-35898-1

Client Sample ID: **OC-SW-ISCO1**

Lab Sample ID: 360-35898-1
Client Matrix: Water

Date Sampled: 08/23/2011 1025
Date Received: 08/23/2011 1645

6010B Total Metals

Analysis Method:	6010B	Analysis Batch:	360-79049	Instrument ID:	Varian ICP
Prep Method:	3010A	Prep Batch:	360-78938	Lab File ID:	082611a.csv
Dilution:	1.0			Initial Weight/Volume:	50 mL
Analysis Date:	08/26/2011 1221			Final Weight/Volume:	50 mL
Prep Date:	08/25/2011 0735				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Aluminum	150		13	100
Chromium	16		0.65	5.0
Sodium	73000		280	2000

6010B Dissolved Metals-Dissolved

Analysis Method:	6010B	Analysis Batch:	360-79397	Instrument ID:	Varian ICP
	N/A		N/A	Lab File ID:	090111b.csv
Dilution:	1.0			Initial Weight/Volume:	1.0 mL
Analysis Date:	09/01/2011 1347			Final Weight/Volume:	1.0 mL
Prep Date:	N/A				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Aluminum	40	J	13	100
Chromium	8.6		0.65	5.0
Sodium	90000 J	~~B~~	280	2000

9/2/11

Client: Olin Corporation

Job Number: 360-35898-1

Client Sample ID: **OC-SW-ISCO2**

Lab Sample ID: 360-35898-2
Client Matrix: Water

Date Sampled: 08/23/2011 0915
Date Received: 08/23/2011 1645

6010B Total Metals

Analysis Method:	6010B	Analysis Batch:	360-79049	Instrument ID:	Varian ICP
Prep Method:	3010A	Prep Batch:	360-78938	Lab File ID:	082611a.csv
Dilution:	1.0			Initial Weight/Volume:	50 mL
Analysis Date:	08/26/2011 1223			Final Weight/Volume:	50 mL
Prep Date:	08/25/2011 0737				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Aluminum	230		13	100
Chromium	51		0.65	5.0
Sodium	150000		280	2000

6010B Dissolved Metals-Dissolved

Analysis Method:	6010B	Analysis Batch:	360-79397	Instrument ID:	Varian ICP
	N/A		N/A	Lab File ID:	090111b.csv
Dilution:	1.0			Initial Weight/Volume:	1.0 mL
Analysis Date:	09/01/2011 1359			Final Weight/Volume:	1.0 mL
Prep Date:	N/A				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Aluminum	36	J	13	100
Chromium	13		0.65	5.0
Sodium	190000 J	~~B~~	280	2000

9/21/11

Client: Olin Corporation

Job Number: 360-35898-1

Client Sample ID: **OC-SW-ISCO3**

Lab Sample ID: 360-35898-3
Client Matrix: Water

Date Sampled: 08/23/2011 0900
Date Received: 08/23/2011 1645

6010B Total Metals

Analysis Method:	6010B	Analysis Batch:	360-79049	Instrument ID:	Varian ICP
Prep Method:	3010A	Prep Batch:	360-78938	Lab File ID:	082611a.csv
Dilution:	1.0			Initial Weight/Volume:	50 mL
Analysis Date:	08/26/2011 1232			Final Weight/Volume:	50 mL
Prep Date:	08/25/2011 0737				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Aluminum	53	J	13	100
Chromium	1.2	J	0.65	5.0
Sodium	82000		280	2000

6010B Dissolved Metals-Dissolved

Analysis Method:	6010B	Analysis Batch:	360-79397	Instrument ID:	Varian ICP
	N/A		N/A	Lab File ID:	090111b.csv
Dilution:	1.0			Initial Weight/Volume:	1.0 mL
Analysis Date:	09/01/2011 1408			Final Weight/Volume:	1.0 mL
Prep Date:	N/A				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Aluminum	ND		13	100
Chromium	ND		0.65	5.0
Sodium	99000 J	B	280	2000

9/21/11

Client: Olin Corporation

Job Number: 360-35898-1

Client Sample ID: **OC-SW-PZ-16RRSW**

Lab Sample ID: 360-35898-4
Client Matrix: Water

Date Sampled: 08/23/2011 0925
Date Received: 08/23/2011 1645

6010B Total Metals

Analysis Method:	6010B	Analysis Batch:	360-79049	Instrument ID:	Varian ICP
Prep Method:	3010A	Prep Batch:	360-78938	Lab File ID:	082611a.csv
Dilution:	1.0			Initial Weight/Volume:	50 mL
Analysis Date:	08/26/2011 1235			Final Weight/Volume:	50 mL
Prep Date:	08/25/2011 0737				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Aluminum	1900		13	100
Chromium	560		0.65	5.0
Sodium	160000		280	2000

6010B Dissolved Metals-Dissolved

Analysis Method:	6010B	Analysis Batch:	360-79397	Instrument ID:	Varian ICP
	N/A		N/A	Lab File ID:	090111b.csv
Dilution:	1.0			Initial Weight/Volume:	1.0 mL
Analysis Date:	09/01/2011 1411			Final Weight/Volume:	1.0 mL
Prep Date:	N/A				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Aluminum	1500		13	100
Chromium	490		0.65	5.0
Sodium	200000 J	~~B~~	280	2000

9/21/11

Client: Olin Corporation

Job Number: 360-35898-1

Client Sample ID: **OC-SW-PZ-17RRSW**

Lab Sample ID: 360-35898-5
Client Matrix: Water

Date Sampled: 08/23/2011 0940
Date Received: 08/23/2011 1645

6010B Total Metals

Analysis Method:	6010B	Analysis Batch:	360-79049	Instrument ID:	Varian ICP
Prep Method:	3010A	Prep Batch:	360-78938	Lab File ID:	082611a.csv
Dilution:	1.0			Initial Weight/Volume:	50 mL
Analysis Date:	08/26/2011 1238			Final Weight/Volume:	50 mL
Prep Date:	08/25/2011 0737				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Aluminum	5700		13	100
Chromium	1300		0.65	5.0
Sodium	160000		280	2000

6010B Dissolved Metals-Dissolved

Analysis Method:	6010B	Analysis Batch:	360-79397	Instrument ID:	Varian ICP
	N/A		N/A	Lab File ID:	090111b.csv
Dilution:	1.0			Initial Weight/Volume:	1.0 mL
Analysis Date:	09/01/2011 1414			Final Weight/Volume:	1.0 mL
Prep Date:	N/A				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Aluminum	1400		13	100
Chromium	600		0.65	5.0
Sodium	190000 J	~~B~~	280	2000

9/21/11

Client: Olin Corporation

Job Number: 360-35898-1

Client Sample ID: **OC-SW-PZ-18RSW**

Lab Sample ID: 360-35898-6
Client Matrix: Water

Date Sampled: 08/23/2011 1010
Date Received: 08/23/2011 1645

6010B Total Metals

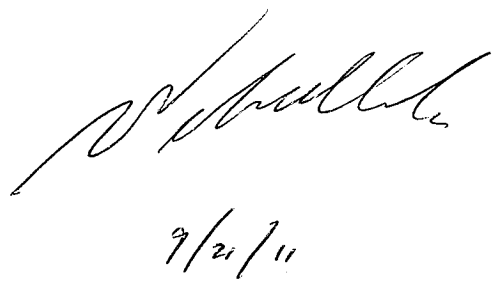
Analysis Method:	6010B	Analysis Batch:	360-79049	Instrument ID:	Varian ICP
Prep Method:	3010A	Prep Batch:	360-78938	Lab File ID:	082611a.csv
Dilution:	1.0			Initial Weight/Volume:	50 mL
Analysis Date:	08/26/2011 1241			Final Weight/Volume:	50 mL
Prep Date:	08/25/2011 0737				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Aluminum	140		13	100
Chromium	15		0.65	5.0
Sodium	67000		280	2000

6010B Dissolved Metals-Dissolved

Analysis Method:	6010B	Analysis Batch:	360-79397	Instrument ID:	Varian ICP
	N/A		N/A	Lab File ID:	090111b.csv
Dilution:	1.0			Initial Weight/Volume:	1.0 mL
Analysis Date:	09/01/2011 1418			Final Weight/Volume:	1.0 mL
Prep Date:	N/A				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Aluminum	36	J	13	100
Chromium	8.2		0.65	5.0
Sodium	89000 J	~~B~~	280	2000



9/21/11

Client: Olin Corporation

Job Number: 360-35898-1

Client Sample ID: **OC-SW-SD-17**

Lab Sample ID: 360-35898-7
Client Matrix: Water

Date Sampled: 08/23/2011 0950
Date Received: 08/23/2011 1645

6010B Total Metals

Analysis Method:	6010B	Analysis Batch:	360-79049	Instrument ID:	Varian ICP
Prep Method:	3010A	Prep Batch:	360-78938	Lab File ID:	082611a.csv
Dilution:	1.0			Initial Weight/Volume:	50 mL
Analysis Date:	08/26/2011 1244			Final Weight/Volume:	50 mL
Prep Date:	08/25/2011 0737				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Aluminum	1200		13	100
Chromium	280		0.65	5.0
Sodium	96000		280	2000

6010B Dissolved Metals-Dissolved

Analysis Method:	6010B	Analysis Batch:	360-79397	Instrument ID:	Varian ICP
	N/A		N/A	Lab File ID:	090111b.csv
Dilution:	1.0			Initial Weight/Volume:	1.0 mL
Analysis Date:	09/01/2011 1421			Final Weight/Volume:	1.0 mL
Prep Date:	N/A				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Aluminum	920		13	100
Chromium	280		0.65	5.0
Sodium	140000 J	B	280	2000

9/21/11

Version 1.2, Nov 2002

OLIN-WILMINGTON
LEVEL I DATA QUALITY EVALUATION
STANDARD OPERATING PROCEDURE AND CHECKLIST
ICP METALS BY METHOD 6010B/200.7

Reviewer/Date [signature] 9/21/11
Sr. Review/Date Chris Ricardi 10/14/11
Lab Report # 360-35962-1
Project # 6107110006-12

dissolved aluminum, chromium

1.0 Laboratory Deliverable Requirements

1.1 Laboratory Information: Was all of the following provided in the laboratory report? **Yes** [✓] No [ ] N/A [ ] Comments:
Check items received.

☑ *Name of Laboratory* ☑ *Address* ☑ *Project ID* ☑ *Phone #* ☑ *Sample identification – Field and Laboratory*
Client Information: ☑ *Name* ☑ *Address* ☑ *Client Contact* *(IDs must be cross-referenced)*

ACTION: If no, contact lab for submission of missing or illegible information.

1.2 Laboratory Report Certification Statement ***Yes*** [✓] *No* [ ] *N/A* [ ] *Comments:*

Does the laboratory report include a completed Analytical Report Certification in the required format?

***ACTION**: If no, contact lab for submission of missing certification or certification with correct format.*

1.3 Laboratory Case Narrative: ***Yes*** [✓] *No* [ ] *N/A* [ ] *Comments:*

☑ *Narrative serves as an exception report for the project and method QA/QC performance.* ☐ *Narrative includes an explanation of each discrepancy on the*

Certification Statement.

***ACTION**: If no, contact lab for submission of missing or illegible information.*

1.4 Chain of Custody (COC) copy present with all documentation completed **Yes** [✓] No [ ] N/A [ ] Comments:

NOTE: Olin receives and maintains the *original COC.*

ACTION: If no, contact lab for submission of copy of completed *COC.*

1.5 Sample Receipt Information (*Cooler Receipt Form present?*): **Yes** [✓] No [ ] N/A [ ] Comments:

Were each of the following tasks completed and recorded upon receipt of the sample(s) into the laboratory?

☑ Sample temperature confirmed: must be 1° – 10° C. (If samples were sent by courier and delivered on the same day as collection, temperature requirement does not apply).

☑ Container type noted ☑ sample condition observed ☑ pH verified (where applicable) ☑ Field and lab IDs cross referenced

ACTION: If no, contact lab for submission of missing or incomplete documentation.

1.5.1 Were all samples delivered to the laboratory without breakage? **Yes** [✓] No [ ] N/A [ ] Comments:

1.5.2 Does the *Cooler Receipt Form* or Lab Narrative indicate other problems with sample receipt, condition of the samples, analytical problems or special circumstances affecting the quality of the data? Yes [ ] **No** [✓] N/A [ ] Comments:

1.6 Sample Results Section: *Was each of the following requirements supplied in the laboratory report for each sample?* **Yes** [✓] No [ ] N/A [ ] Comments:

☑ Field ID and Lab ID ☑ *Date and time collected* ☑ Analyst Initials ☑ *Dilution Factor* ☑ % moisture or solids ☑ *Reporting limits*
☑ *Clean-up method* ☑ Analysis method ☑ *Preparation method* ☑ *Date of preparation/extraction/digestion clean-up and analysis, where applicable*
☑ Matrix ☑ Target analytes and concentrations ☑ Units (soils must be reported in dry weight)

ACTION: If no, contact lab for submission of missing or incomplete information.

1.7 QA/QC Information: Was each of the following information supplied in the laboratory report for each sample batch? **Yes** [✓] No [ ] N/A [ ] Comments:

☑ Method blank results ☑ LCS recoveries ☑ MS/MSD recoveries and RPDs ☑ Laboratory duplicate results (where applicable)

ACTION: If no, contact lab for submission of missing or incomplete information.

2.0 Holding Times

Have any technical holding times, determined from date of collection to date of analysis, been exceeded? Holding time for metals is 180 days from sample collection to analysis for both water and soil. Yes [ ] **No [✓]** N/A [ ] Comments:

NOTE: List samples that exceed hold time with # of days exceeded on checklist

ACTION: If technical holding times are exceeded, qualify all positive results (J) and non-detects (UJ). If grossly exceeded (2X holding time) reject (R) all non-detect results.

3.0 Laboratory Method

3.1 Was the correct laboratory method used? **Yes [✓]** No [ ] N/A [ ] Comments:

Water Digestion	3005A or 3010A or 3020A
Soil Digestion	3050B
Metals	6010B or 200.7

ACTION: If no, contact laboratory to provide justification for method change compared to the requested method. Contact senior chemist to inform Client of change and to request variance.

3.2 Are the practical quantitation limits the same as those specified by the ☐ SOW ☑ QAPP ☐ Lab ☐ MADEP **Yes [✓]** No [ ] N/A [ ] Comments:

NOTE: *Verify that the reported metals match the target list specified on the COC.*

ACTION: If no, evaluate variation with respect to sample matrix, preparation, dilution, moisture, etc. If sample PQL is indeterminate, contact lab for explanation.

3.3 Are results present for each sample in the SDG? **Yes** [✓] No [ ] N/A [ ] Comments:

ACTION: If no, check Request for Analysis to verify if method was ordered and COC to verify that it was sent, and contact lab for resubmission of the missing data

3.4 If dilutions were required, were dilution factors reported? **Yes** [✓] No [ ] N/A [ ] Comments:

ACTION: If no, contact the lab for submission.

4.0 Method Blanks

4.1 Is the Method Blank Summary present? **Yes** [✓] No [ ] N/A [ ] Comments:

ACTION: If no, call the laboratory for submission of missing data.

4.2 Frequency of Analysis: Was a method blank analyzed for each digestion batch of < 20 field samples? **Yes** [✓] No [ ] N/A [ ] Comments:

ACTION: If no, contact laboratory for justification. Consult senior chemist for action needed. Narrate non-compliance.

4.3 Is the method blank less than the PQLs for all target elements? **Yes** [✓] No [ ] N/A [ ] Comments:

NOTE: *MADEP requires the method blank to be matrix matched and digested with the samples*

4.4 Do any method blanks have positive results for metals? Qualify data according to the following: Yes [ ] **No** [✓] N/A [ ] Comments:

If the sample concentration is < 5 × blank value, flag sample result non-detect "U" at the PQL or the concentration reported if greater than the PQL.

If the sample concentration is > 5 × blank value, no qualification is needed.

ACTION: For any blank with positive results, list all contaminants for each method blank including the concentration detected and the flagging level (flagging level = 5x the blank value) and the associated samples and qualifiers.

5.0 Laboratory Control Standard

5.1 Was a laboratory control standard run with each analytical batch of 20 samples or less?

Yes [✓] No [ ] N/A [ ] Comments:

NOTE: *A full target, second source LCS is required by MADEP.*
ACTION: Call laboratory for LCS form submittal. If data are not available, use professional judgement to evaluate data accuracy associated with that batch.

5.2 Is a LCS Summary Form present?

Yes [✓] No [ ] N/A [ ] Comments:

ACTION: If no, contact lab for resubmission of missing data.

5.3 Is the recovery of any analyte outside of MADEP control limits?

Yes [ ] **No** [✓] N/A [ ] Comments:

Sample Type	***MADEP % Rec***
Water	*80-120*
Soil	within Lab generated limits

ACTION: If recovery is above the upper limit, qualify all positive sample results within the batch as (J). If recovery is below the lower limit, qualify all positive and non-detects results within the batch as (J). If LCS recovery is <30%, positive and non-detect results are rejected (R).

Comments:

6.0 Matrix Spikes

Matrix spikes may be collected at different frequencies based on monthly, quarterly, or task specific schedules. Confirm spike requirements for each set with the senior chemist.

6.1 Were project-specific MS/MSDs ~~collected?~~ analyzed @ 9/21/11 List project samples that were spiked.

Yes [✓] No [ ] N/A [ ] Comments: OC-GW-202S

ACTION: If no, contact senior chemist to see if any were specified.

6.2 Is the Matrix Spike/Matrix Spike Duplicate Recovery Form present?

Yes [✓] No [ ] N/A [ ] Comments:

NOTE: *A full target, second source MS/MSD is required by MADEP.*
ACTION: If any matrix spike data are missing, call lab for resubmission.

6.3 Were matrix spikes analyzed as indicated on the COC and project schedule?

Yes [✓] No [ ] N/A [ ] Comments:

ACTION: If any matrix spike data are missing, call lab for resubmission. If none, no qualification is needed. Narrate non-compliance.

6.4 Are any metal spike recoveries outside of the QC limits?

Yes [ ] **No [✓]** N/A [ ] Comments:

Sample Type	***MADEP* % Rec**	QAPP % Rec	Method
Water	*75-125*	N/A	6010B
Water	*N/A*	70-130	200.7
Soil	*75-125*	75-125	6010B

NOTE: $\%R = \frac{(SSR-SR)}{SA} \times 100\%$ Where: SSR = Spiked sample result, SR = Sample result, SA = Spike added

NOTE: If dilutions are required due to high sample concentrations (> 4X spike), the data are evaluated, but no flags are applied.

NOTE: If only one of the recoveries for an MS/MSD pair is outside of the control limits, no qualification is necessary. Use professional judgment for the MS/MSD flags.

ACTION: MS/MSD flags only apply to the sample spiked. If the recoveries of the MS and MSD exceed the upper control limit, qualify positive results as estimated (J). If the recoveries of the MS and MSD are lower than the lower control limit, qualify positive results and non-detects (J).

6.5 Are any RPDs for MS/MSD recoveries outside of the QC limits? Yes [ ] **No** [ ] N/A [✓] Comments:

NOTE: $RPD = \frac{S-D}{(S+D)/2} \times 100\%$ Where: S = MS sample result
D = MSD sample result

NOTE: If dilutions are required due to high sample concentrations, the data are evaluated, but no flags are applied.

ACTION: If the RPD exceeds the control limit, qualify positive results and non-detects (J).

7.0 Laboratory Duplicate

7.1 Was a laboratory duplicate sample analyzed? If so, is the Laboratory Duplicate Sample Form present? **Yes** [✓] No [ ] N/A [ ] Comments:

NOTE: *MADEP refers to this sample as a "matrix duplicate".*

ACTION: If not analyzed, qualification is not needed. If data is missing, contact laboratory for resubmission of report. Narrate non-compliance.

7.2 Is the RPD between the result for the laboratory duplicate sample and the result for the parent sample outside of the QA/QC limits? Yes [ ] **No** [✓] N/A [ ] Comments:

MADEP Laboratory Duplicate Sample RPD Criteria:	QAPP RPD
For aqueous results > 5× RL, RPD must be ± 20%	20
For aqueous results < 5× RL, RPD must be ≤ RL	20
For soil/sediment results > 5× RL, RPD must be ± 35%	20
For soil/sediment results < 5× RL, RPD must be ≤ 2× RL	20

ACTION: If the RPD exceeds the limits, qualify both positive results and non-detects as estimated and flag them J. Narrate non-compliance

8.0 Sampling Accuracy

The majority of ground water samples are collected directly from a tap, process stream, or with dedicated tubing. Rinse blanks will not be collected.

8.1 Were rinsate blanks collected? Prior to evaluating rinsate blanks, obtain a list of the associated samples from the senior chemist. **Yes [ ]** No [✓] N/A [ ] Comments:

8.2 Do any rinsate blanks have positive results? Yes [ ] **No [ ]** N/A [✓] Comments:

***NOTE**: MADEP does not require the collection of rinsate blanks.*

ACTION: Evaluate rinsate results against blank results to determine if contaminant may be laboratory-derived. If results are not lab-related, qualify according to below.

If the sample concentration is < 5 × blank value, flag sample result non-detect "U" at the PQL or the concentration reported if greater than the PQL.

If the sample concentration is > 5 × blank value, no qualification is needed.

9.0 Field Duplicates

9.1 Were field duplicate samples collected? Obtain a list of samples and their associated field duplicates. Yes [ ] **No [✓]** N/A [ ] Comments:

9.2 Were field duplicates collected per the required frequency? **Yes** [ ] No [ ] N/A [✓] Comments:

SOW ☐ QAPP *(1 per 10)* ☐ *MADEP Option 1 (1 per 20)* ☐ *MADEP Option 3 (1 per 10)* ☐

9.3 Was the RPD ≤ 50% for soils or waters? Calculate the RPD for all results and attach to this review. **Yes** [ ] No [ ] N/A [✓] Comments:

ACTION: RPD must be ≤50% for soil and water. Qualify data (J) for both sample results if the RPD exceeds 50%.

10.0 Special QA/QC

10.1 Were both total and dissolved metals analysis performed? If so, the dissolved metal concentration should not exceed that of the total metal. Yes [ ] **No** [✓] N/A [ ] Comments:

ACTION: If results for both total and dissolved are ≥ 5x the PQL **and** the dissolved concentration is 10% higher than the total, flag both results as estimated (J). If total and dissolved concentrations are less than 5x the PQL **and** the **difference** exceeds 2x the PQL, flag both results as estimated (J)

10.0 Application of Validation Qualifiers

Was any of the data qualified? Yes [ ] No [✓] N/A [ ] Comments:

If so, apply data qualifiers directly to the DQE copy of laboratory report and **flag pages** for entry in database.

REFERENCES

LAW, 1999, "Final Quality Assurance Project Plan, Olin Wilmington Property, 51 Eames Street, Wilmington, MA", LAW Engineering and Environmental Services, Kennesaw, GA 30144. August 1999

U.S. Environmental Protection Agency (USEPA), 1989. "Region 1 Laboratory Data Validation Functional Guidelines For Evaluating Inorganic Analyses"; Hazardous Site Evaluation Division; February 1989.

MADEP, 2001. Massachusetts Department of Environmental Protection Bureau of Waste Site Cleanup, "Massachusetts Quality Assurance and Quality Control (QA/QC) Requirements." BWSC-CAM, Interim Final Draft, Revision No. 2, 5 October 2001.

MADEP, 2001. Massachusetts Department of Environmental Protection Bureau of Waste Site Cleanup, "Quality Assurance and Quality Control Guidelines for Sampling, Data Evaluation and Reporting Activities," BWSC-CAM, Section VII, Public Comment Draft, Revision No. 0, 21 December 2001.

OLIN-WILMINGTON
LEVEL I DATA QUALITY EVALUATION
STANDARD OPERATING PROCEDURE AND CHECKLIST
WET CHEMISTRY PARAMETERS BY VARIOUS METHODS

Reviewer/Date 9/21/11
Sr. Review/Date Chris Ricardi 10/14/11
Lab Report # 360-35898-1
Project # 6107110016.12

Specific conductance, chloride, nitrate, nitrite, sulfate, ammonia.

Note: The following analyses will be evaluated according to the "MADEP QA/QC Guidelines for **Sampling, Data Evaluation and Reporting Activities.**" MADEP, however, may not list QA/QC criteria for every chemical analysis. Where not defined by MADEP, criteria will default to values stipulated in the QAPP. Where the QAPP does not define criteria, QA/QC requirements will default to limits employed by the laboratory.

1.0 Laboratory Deliverable Requirements

1.1 Laboratory Information: Was all of the following provided in the laboratory report? **Yes** [✓] No [ ] N/A [ ] Comments:
Check items received.

☑ *Name of Laboratory* ☑ *Address* ☑ *Project ID* ☑ *Phone #* ☑ *Sample identification – Field and Laboratory*

Client Information: ☑ *Name* ☑ *Address* ☑ *Client Contact* *(IDs must be cross-referenced)*

ACTION: If no, contact lab for submission of missing or illegible information.

1.2 Laboratory Report Certification Statement ***Yes*** [✓] *No* [ ] *N/A* [ ] *Comments:*

Does the laboratory report include a completed Analytical Report Certification in the required format?

***ACTION**: If no, contact lab for submission of missing certification or certification with correct format.*

1.3 Laboratory Case Narrative: ***Yes*** [✓] *No* [ ] *N/A* [ ] *Comments:*

☑ *Narrative serves as an exception report for the project and method QA/QC performance.* ☐ *Narrative includes an explanation of each discrepancy on the Certification Statement.*

***ACTION**: If no, contact lab for submission of missing or illegible information.*

1.4 Chain of Custody (COC) copy present with all documentation completed? **Yes** [✓] No [ ] N/A [ ] Comments:

Does the laboratory report include copies of Chain of Custody forms containing all samples in this SDG?

NOTE: Olin receives and maintains the *original* COC.

ACTION: If no, contact lab for submission of copy of missing completed COC.

1.5 Sample Receipt Information (*Cooler Receipt Form*): Were each of the following tasks completed and recorded upon receipt of the sample(s) into the laboratory?

Yes [✓] No [ ] N/A [ ] Comments:

☒ Sample temperature confirmed: must be 1° – 10° C. (If samples were sent by courier and delivered on the same day as collection, temperature requirement does not apply).

☑ Container type noted ☑ Condition observed ☑ pH verified (where applicable) ☑ Field and lab IDs cross referenced

ACTION: If no, contact lab for submission of missing or incomplete documentation.

1.5.1 Were the correct bottles and preservatives used?

Yes [✓] No [ ] N/A [ ] Comments:

✓ Ammonia,– 1 Liter polyethylene/H_2SO_4 to pH<2,cool to 4°C

Oil & Grease – 1 Liter glass/HCL or H2SO4 to pH<2,cool to 4°C

Alkalinity – 1 Liter polyethylene/cool to 4°C

Chemical Oxygen Demand – 50 mL polyethylene/H_2SO_4 to pH<2,cool to 4°C

✓ Chloride, pH, sulfate, nitrate, nitrite - 50 mL polyethylene/cool to 4°C

Nitrate/nitrite - H2SO4 to pH<2,cool to 4°C

Organic Carbon – 500 mL amber glass bottle/HCl or H_2SO_4 to pH<2,cool to 4°C

Sulfide – 50 mL polyethylene/ZnAcetate + NaOH to pH>9, cool to 4°C

Phenolics - H_2SO_4 to pH<2,cool to 4°C

✓ Specific conductance, TDS, TSS – 100 mL polyethylene/cool to 4°C

ACTION: If no, inform senior chemist. Document justification for change in container/volume (if applicable), qualify positive and non-detect data (J) data if cooler temperature exceeds 10°C. Rejection of data requires professional judgment

1.5.2 Were all samples delivered to the laboratory without breakage?

Yes [✓] No [ ] N/A [ ] Comments:

1.5.3 Does the *Cooler Receipt Form* or Lab Narrative indicate other problems with sample receipt, condition of the samples, analytical problems or special circumstances affecting the quality of the data?

Yes [ ] **No** [✓] N/A [ ] Comments:

1.6 Sample Results Section: *Was the following information supplied in the laboratory report for each sample?* **Yes [✓]** No [ ] N/A [ ] Comments:

- [✓] Field ID and Lab ID
- [✓] Date and time collected
- [✓] Analyst Initials
- [✓] Dilution Factor
- [N/A] % moisture or solids
- [✓] Reporting limits
- [✓] *Clean-up method*
- [✓] Analysis method
- [✓] Preparation method
- [✓] Date of preparation/extraction/digestion clean-up and analysis, where applicable
- [✓] Matrix
- [✓] Target analytes and concentrations
- [✓] Units (soils must be reported in dry weight)

ACTION: If no, contact lab for submission of missing or incomplete information.

1.7 QA/QC Information: Was the following information provided in the laboratory report for each sample batch? **Yes [✓]** No [ ] N/A [ ] Comments:

- [✓] Method blank results
- [✓] LCS recoveries
- [✓] MS/MSD recoveries and RPDs
- [✓] Laboratory duplicate results (where applicable)

ACTION: If no, contact lab for submission of missing or incomplete information.

2.0 Holding Times Yes [ ] **No [✓]** N/A [ ] Comments:

Have any technical holding times, determined from date of collection to date of analysis, been exceeded? The holding times are as follows:

- [✓] 28 days = ammonia, chemical oxygen demand, chloride, organic carbon, oil & grease, specific conductance, total organic carbon and sulfate
- [✓] Alkalinity = 14 days
- Sulfide, TDS, TSS = 7 days
- pH = analyze immediately
- [✓] Nitrate nitrogen as N = 48 hrs
- [✓] Nitrite nitrogen as N = 48 hrs
- Nitrate + Nitrite as N = 28 days

NOTE: List samples that exceed hold time with # of days exceeded on checklist

ACTION: If technical holding times are exceeded qualify results (J). For water samples that are grossly exceeded (>2X hold time) reject (R) all non-detect results. Professional judgment used to qualify soils.

3.0 Laboratory Method **Yes [✓]** No [ ] N/A [ ] Comments:

3.1 Was the correct laboratory method used?

ACTION: If no, contact lab to provide justification for method change compared to the requested method. Contact senior chemist to inform Client of change or to request variance.

3.2 Are the practical quantitation limits the same as those specified by the ☑ QAPP/IRSWP ☐ Lab?

Yes [ ] No [✓] N/A [ ] Comments: Due to chloride co-elution, samples OC-SW-ISCO1, -ISCO2, -ISCO3, -PZ-16RRSW, -17RRSW, and -SP-7 were analyzed at a ten fold dilution. Nitrite reporting limits were elevated accordingly.

Note: *The MADEP QA/QC Guidelines do not yet list PQLs for wet chemistry analyses, therefore all criteria will default to values stipulated in the QAPP*. Where the QAPP does not define criteria, QA/QC requirements default to limits employed by the lab**. Other criteria may also apply.*

Ammonia* ☑ = 0.1 mg/ L | Alkalinity** ☐ = 1 mg/L | Bicarbonate Alkalinity** ☐ = 1 mg/L | Carbonate Alkalinity** ☐ = 1 mg/L

Nitrate Nitrogen as N* ☑ = .05 mg/L | Nitrite Nitrogen as N* ☒ = .01 mg/L | Chloride* ☑ = 1 mg/L | Hardness *☐ = 2 mg/L

Spec. Cond.** ☑ 3 umhos/cm | Total Organic Carbon** ☐ = 1 mg/L | Oil & Grease* ☐ = 5.5 mg/L | Sulfate (EPA 300.0)* ☐ = 2 mg/L

COD:* Low – 20 mg/L | COD* High - 50 mg/L ☐ | TDS* ☐ = 10 mg/L | TSS* ☐ = 5 mg/L

pH* ☐ <2 to > 12 | Phenolic - 0.01 mg/L

Other parameter(list) _____ PQL = _____ ☐ Source of PQL = _____

Other parameter(list) _____ PQL = _____ ☐ Source of PQL = _____

ACTION: If no, evaluate change with respect to sample matrix, preparation, dilution, moisture, etc. If sample PQL is indeterminate, contact lab for explanation.

3.3 Are the appropriate parameter results present for each sample in the SDG? Yes [✓] No [ ] N/A [ ] Comments:

ACTION: If no, check Request for Analysis to verify if method was ordered and COC to verify that it was sent, and contact lab for resubmission of the missing data

3.4 If *dilutions were required, were dilution factors reported?* Yes [✓] No [ ] N/A [ ] Comments:

ACTION: If no, contact the lab for submission.

4.0 Method Blanks Yes [✓] No [ ] N/A [ ] Comments:

4.1 Are the Method Blank Summaries present?

ACTION: If no, call the laboratory for submission of missing data.

4.2 Was a method blank analyzed for each analysis batch of wet chemistry field samples of 20 or less? Yes [✓] No [ ] N/A [ ] Comments:

ACTION: If no, document discrepancy in case narrative and contact lab for justification. Consult senior chemist for action needed.

4.3 Is the method blank less than the PQL? (See Section 3.2 for PQLs). **Yes [✓]** No [ ] N/A [ ] Comments:

4.4 Do any method blanks have positive results for wet chemistry parameters? Qualify data according to the following: Yes [ ] **No [✓]** N/A [ ] Comments:

If the sample concentration is < 5 × blank value, flag sample result non-detect "U" at the PQL or the concentration reported if greater than the PQL.

If the sample concentration is > 5 × blank value, no qualification is needed.

ACTION: If any blank has positive results, list all the concentrations detected and flagging level (flagging level = 5 × blank value) on the checklist. List all affected samples and their qualifiers.

5.0 Laboratory Control Standards

5.1 Was a laboratory control standard (LCS) run with each analytical batch of 20 samples or less? **Yes [✓]** No [ ] N/A [ ] Comments:

ACTION: If no, call laboratory for LCS form submittal. If data is not available, use professional judgment to determine qualification actions for data associated with the batch.

5.2 Is a LCS Summary Form present? **Yes [✓]** No [ ] N/A [ ] Comments:

ACTION: If no, contact lab for resubmission of missing data.

5.3 Is any wet chemistry analyte LCS recovery outside the control limits? Yes [ ] **No [✓]** N/A [ ] Comments:

LCS Limits:

Alkalinity** ☐ = 80-120%	Bicarbonate Alkalinity** ☐ = 80-120%	Carbonate Alkalinity** ☐ = 80-120%	Specific Conductivity *☑ = 80-120%
Total Organic Carbon** ☐ = 80-120%	TDS** ☐ = 80-120%	Oil & Grease* ☐ = 80-120%	Ammonia Nitrogen as N* ☑ = 80-120%
COD Low* ☐ = 80-120%	COD High* ☐ = 80-120%	Nitrate Nitrogen as N**☑ = 80-120%	Nitrite Nitrogen as N** ☑ = 80-120%
Hardness* ☐ = 80-120%	Chloride* ☑ = 80-120%	Sulfate (EPA 300.0)* ☑ = 80-120%	pH* ☐ = 98-102% TSS* NA

Other parameter(list) _____ %R = _____ ☐ Rec Limits= _____

Other parameter(list) _____ %R = _____ ☐ Rec Limits = _____

(MADEP has not yet defined LCS recovery limits for wet chemistry analyses.)

ACTION: If recovery is above the upper limit, qualify all positive sample results within the batch as (J). If recovery is below the lower limit, qualify all positive and no-detect results within the batch as (J). If LCS recovery is <10%, non-detect results are rejected (R).

6.0 Matrix Spikes

Matrix spikes may be collected at different frequencies based on monthly, quarterly, or task specific schedules. Confirm spike requirements for each set with the senior chemist.

6.1 Were project-specific MS/MSDs analyzed? List project samples that were spiked.

Yes [✓] No [ ] N/A [ ] Comments: OC-SW-1SC01 - chloride, sulfate, nitrate, nitrite MS/MSD. OC-SW-SD-17 ammonia MS/MSD.

ACTION: If no, contact senior chemist to see if any were specified.

6.2 Is the MS/MSD Recovery Form present?

Yes [✓] No [ ] N/A [ ] Comments:

ACTION: If no, contact lab for resubmission of missing data.

6.3 Were matrix spikes analyzed at the required frequency of 1 per 20 samples per matrix?

Yes [✓] No [ ] N/A [ ] Comments:

ACTION: If any matrix spike data is missing, call lab for resubmission.

6.4 Are any wet chemistry analyte spike recoveries outside of the QC limits?

Yes [✓] No [ ] N/A [ ] Comments: Ammonia MS/MSD percent recoveries (145/152). Unspiked ammonia conc. is greater than 4x spike. No action.

Client: Olin Corporation

Job Number: 360-35898-1

Method Blank - Batch: 360-79479

Method: L107-06-1B
Preparation: Distill/Ammonia

Lab Sample ID:	MB 360-79479/1-A	Analysis Batch:	360-79587	Instrument ID:	Lachat
Client Matrix:	Water	Prep Batch:	360-79479	Lab File ID:	N/A
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	50 mL
Analysis Date:	09/06/2011 1509	Units:	mg/L	Final Weight/Volume:	50 mL
Prep Date:	09/02/2011 1415				
Leach Date:	N/A				

Analyte	Result	Qual	RL	RL
Ammonia	ND		0.10	0.10

Lab Control Sample - Batch: 360-79479

Method: L107-06-1B
Preparation: Distill/Ammonia

Lab Sample ID:	LCS 360-79479/2-A	Analysis Batch:	360-79587	Instrument ID:	Lachat
Client Matrix:	Water	Prep Batch:	360-79479	Lab File ID:	N/A
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	50 mL
Analysis Date:	09/06/2011 1510	Units:	mg/L	Final Weight/Volume:	50 mL
Prep Date:	09/02/2011 1415				
Leach Date:	N/A				

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Ammonia	10.0	9.33	93	90 - 110	

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 360-79479

Method: L107-06-1B
Preparation: Distill/Ammonia

MS Lab Sample ID:	360-35898-7	Analysis Batch:	360-79587	Instrument ID:	Lachat
Client Matrix:	Water	Prep Batch:	360-79479	Lab File ID:	N/A
Dilution:	5.0	Leach Batch:	N/A	Initial Weight/Volume:	50 mL
Analysis Date:	09/06/2011 1512			Final Weight/Volume:	50 mL
Prep Date:	09/02/2011 1415				
Leach Date:	N/A				

MSD Lab Sample ID:	360-35898-7	Analysis Batch:	360-79587	Instrument ID:	Lachat
Client Matrix:	Water	Prep Batch:	360-79479	Lab File ID:	N/A
Dilution:	5.0	Leach Batch:	N/A	Initial Weight/Volume:	50 mL
Analysis Date:	09/06/2011 1513			Final Weight/Volume:	50 mL
Prep Date:	09/02/2011 1415				
Leach Date:	N/A				

	% Rec.						
Analyte	MS	MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
Ammonia	145	152	90 - 110	1	20	4	4

NOTE: $\%R = \frac{(SSR-SR)}{SA} \times 100\%$ Where: SSR = Spiked sample result
SR = Sample result
SA = Spike added

MS/MSD Recovery Limits:

Alkalinity* = NA	Bicarbonate Alkalinity* = NA	Carbonate alkalinity* = NA	Ammonia* (LACHAT) ☑ = 75-125%
Chloride*(SM 4500 Cl) ☑ = 75-125%	Specific Conductivity * = NA	Total Organic Carbon* = NA	TDS** = NA
Oil & Grease* = NA	COD Low* ☐ = 75-125%	COD High* ☐ = 75-125%	Nitrate Nitrogen as N** ☑ = 75-125%
Nitrite Nitrogen as N** ☑ = 75-125%	Hardness* ☐ = 75-125%	Sulfate (EPA 300.0)* ☑ = 75-125%	pH* = NA TSS* = NA

Other parameter(list) _____ % R = _____ ☐ Rec Limits = _____

* = Laboratory Limits ** = Olin QAPP Limits (*MADEP has not yet defined LCS recovery limits for wet chemistry analyses.*)

NOTES: 1) If only one of the recoveries for an MS/MSD pair is outside of the control limits, no qualification is necessary. Use professional judgment for the MS/MSD flags.
2) If the MS/MSD was performed by the laboratory on a non-project sample, no qualification is required.

ACTION: MS/MSD flags only apply to the sample spiked. Do not evaluate if sample concentration is > 4X spike. If the recoveries of the MS and MSD exceed the upper control limit, qualify positive results as estimated (J). If the recoveries of the MS and MSD are lower than the lower control limit but > 30%, qualify both positive results and non-detects (J). If the MS/MSD recovery is < 30% and the sample is non-detect, the results are considered unusable and flagged (R).

ACTION: Laboratory control limits apply when spiked sample results fall within the normal calibration range. If dilutions are required due to high sample concentrations, the data is evaluated, but no flags are applied.

6.5 Are any RPDs for MS/MSD recoveries outside of the QA/QC limits?

NOTE: $RPD = \frac{S-D}{(S+D)/2} \times 100\%$ Where S = MS result
D = MSD result

Yes [ ] **No** [✓] N/A [ ] Comments:

MS/MSD RPD Limits:

RPD ≤ 20

7.0 Laboratory Duplicate

Are the RPDs for the laboratory duplicates <20% unless otherwise specified below?

Yes [✓] No [ ] N/A [ ] Comments:

ACTION: If the RPD is greater than specified limits, qualify all results for that analyte as estimated (J).

pH* ☐ = 3% Specific Conductivity *☑ = 5% TSS** ☐ = 6% TDS** ☐ = 6%

8.0 Sampling Accuracy

The majority of ground water samples are collected directly from a tap, process stream, or with dedicated tubing. Rinse blanks will not be collected.

8.1 Were rinsate blanks collected? Prior to evaluating rinsate blanks, obtain a list of the associated samples from the senior chemist. **Yes** [ ] No [✓] N/A [ ] Comments:

8.2 Do any rinsate blanks have positive results? Yes [ ] **No** [ ] N/A [✓] Comments:

ACTION: Evaluate rinsate results vs. blank results to determine if contaminant may be laboratory-derived. If not lab-related, qualify according to the table below.

If the sample concentration is < 5 × blank value, flag sample result non-detect "U" at the PQL or the concentration reported if greater than the PQL.

If the sample concentration is > 5 × blank value, no qualification is needed.

***NOTE**: MADEP does not require the collection of rinsate blanks.*

9.0 Field Duplicates

9.1 Were field duplicate samples collected? Obtain a list of samples and their associated field duplicates. **Yes** [ ] No [✓] N/A [ ] Comments:

9.2 Were field duplicates collected per the required frequency? **Yes** [ ] No [ ] N/A [✓] Comments:

QAPP/IRSWP ☐ *MADEP Option 1(1 per 20)* ☐ *MADEP Option 3 (1 per 10)* ☐

9.3 Was the RPD ≤ 30% for waters ≤ 50% for soils? Calculate the RPD for results and attach to this review. **Yes** [ ] No [ ] N/A [✓] Comments:

ACTION:. Qualify data (J) for both sample results if the RPD exceeded.

Was any of the data qualified? Yes [ ] No [✓] N/A [ ] Comments:

If so, apply data qualifiers directly to the DQE copy of laboratory report and **flag pages** for entry in database.

REFERENCES:-

MACTEC, 2007. "Draft Interim Response Steps Work Plan"; Olin Chemical Superfund Site, 51 Eames Street, Wilmington, Massachusetts.; Project No. 6300-06-0010/41.1; July 25, 2007.

Massachusetts Department of Environmental Protection (MADEP), 2004. "The Compendium of Quality Assurance and Quality Control Requirements and Performance Standards for Selected Analytical Methods Used in Support of Response Actions for the Massachusetts Contingency Plan (MCP)"; Bureau of Waste Site Cleanup; 1 Winter Street, Boston, Massachusetts 02108; WSC-CAM; May 2004.

Version 3, October 2008

OLIN-WILMINGTON
LEVEL I DATA QUALITY EVALUATION
STANDARD OPERATING PROCEDURE AND CHECKLIST
WET CHEMISTRY PARAMETERS BY VARIOUS METHODS

Reviewer/Date 9/21/11
Sr. Review/Date Chris Ricardi 10/14/11
Lab Report # 360-35962-1
Project # 6107110016.12

Specific conductivity, ammonia, chloride, sulfate

Note: The following analyses will be evaluated according to the "MADEP QA/QC Guidelines for **Sampling, Data Evaluation and Reporting Activities.**" MADEP, however, may not list QA/QC criteria for every chemical analysis. Where not defined by MADEP, criteria will default to values stipulated in the QAPP. Where the QAPP does not define criteria, QA/QC requirements will default to limits employed by the laboratory.

1.0 Laboratory Deliverable Requirements

1.1 Laboratory Information: Was all of the following provided in the laboratory report? **Yes** [✓] No [ ] N/A [ ] Comments:
Check items received.

☑ *Name of Laboratory* ☑ *Address* ☑ *Project ID* ☑ *Phone #* ☑ *Sample identification – Field and Laboratory*

Client Information: ☑ *Name* ☑ *Address* ☑ *Client Contact* *(IDs must be cross-referenced)*

ACTION: If no, contact lab for submission of missing or illegible information.

1.2 Laboratory Report Certification Statement ***Yes*** [✓] *No* [ ] *N/A* [ ] *Comments:*

Does the laboratory report include a completed Analytical Report Certification in the required format?

***ACTION**: If no, contact lab for submission of missing certification or certification with correct format.*

1.3 Laboratory Case Narrative: ***Yes*** [✓] *No* [ ] *N/A* [ ] *Comments:*

☑ *Narrative serves as an exception report for the project and method QA/QC performance.* ☐ *Narrative includes an explanation of each discrepancy on the Certification Statement.*

***ACTION**: If no, contact lab for submission of missing or illegible information.*

1.4 Chain of Custody (COC) copy present with all documentation completed? **Yes** [✓] No [ ] N/A [ ] Comments:

Does the laboratory report include copies of Chain of Custody forms containing all samples in this SDG?

NOTE: Olin receives and maintains the *original* COC.

ACTION: If no, contact lab for submission of copy of missing completed COC.

1.5 Sample Receipt Information (*Cooler Receipt Form*): Were each of the following tasks completed and recorded upon receipt of the sample(s) into the laboratory?

Yes [✓] No [ ] N/A [ ] Comments:

☑ Sample temperature confirmed: must be 1° – 10° C. (If samples were sent by courier and delivered on the same day as collection, temperature requirement does not apply).

☑ Container type noted ☑ Condition observed ☑ pH verified (where applicable) ☑ Field and lab IDs cross referenced

ACTION: If no, contact lab for submission of missing or incomplete documentation.

1.5.1 Were the correct bottles and preservatives used?

Yes [✓] No [ ] N/A [ ] Comments:

✓ Ammonia,– 1 Liter polyethylene/H_2SO_4 to pH<2,cool to 4°C

Oil & Grease – 1 Liter glass/HCL or H2SO4 to pH<2,cool to 4°C

Alkalinity – 1 Liter polyethylene/cool to 4°C

Chemical Oxygen Demand – 50 mL polyethylene/H_2SO_4 to pH<2,cool to 4°C

✓ Chloride, pH, sulfate, nitrate, nitrite - 50 mL polyethylene/cool to 4°C

Nitrate/nitrite - H2SO4 to pH<2,cool to 4°C

Organic Carbon – 500 mL amber glass bottle/HCl or H_2SO_4 to pH<2,cool to 4°C

Sulfide – 50 mL polyethylene/ZnAcetate + NaOH to pH>9, cool to 4°C

Phenolics - H_2SO_4 to pH<2,cool to 4°C

✓ Specific conductance, TDS, TSS – 100 mL polyethylene/cool to 4°C

ACTION: If no, inform senior chemist. Document justification for change in container/volume (if applicable), qualify positive and non-detect data (J) data if cooler temperature exceeds 10°C. Rejection of data requires professional judgment

1.5.2 Were all samples delivered to the laboratory without breakage?

Yes [✓] No [ ] N/A [ ] Comments:

1.5.3 Does the *Cooler Receipt Form* or Lab Narrative indicate other problems with sample receipt, condition of the samples, analytical problems or special circumstances affecting the quality of the data?

Yes [ ] No [✓] N/A [ ] Comments:

1.6 Sample Results Section: *Was the following information supplied in the laboratory report for each sample?* **Yes [✓]** No [ ] N/A [ ] Comments:

☑ Field ID and Lab ID ☑ Date and time collected ☑ Analyst Initials ☑ Dilution Factor ☑ % moisture or solids ☑ Reporting limits
☑ *Clean-up method* ☑ Analysis method ☑ Preparation method ☑ Date of preparation/extraction/digestion clean-up and analysis, where applicable
☑ Matrix ☑ Target analytes and concentrations ☑ Units (soils must be reported in dry weight)

ACTION: If no, contact lab for submission of missing or incomplete information.

1.7 QA/QC Information: Was the following information provided in the laboratory report for each sample batch? **Yes [✓]** No [ ] N/A [ ] Comments:

☑ Method blank results ☑ LCS recoveries ☑ MS/MSD recoveries and RPDs ☑ Laboratory duplicate results (where applicable)

ACTION: If no, contact lab for submission of missing or incomplete information.

2.0 Holding Times Yes [ ] **No [✓]** N/A [ ] Comments:

Have any technical holding times, determined from date of collection to date of analysis, been exceeded? The holding times are as follows:

✓ 28 days = ammonia, chemical oxygen demand, chloride, organic carbon, oil & grease, specific conductance, total organic carbon and sulfate

Alkalinity = 14 days | Sulfide, TDS, TSS = 7 days | pH = analyze immediately | Nitrate nitrogen as N = 48 hrs
Nitrite nitrogen as N = 48 hrs | Nitrate + Nitrite as N = 28 days

NOTE: List samples that exceed hold time with # of days exceeded on checklist

ACTION: If technical holding times are exceeded qualify results (J). For water samples that are grossly exceeded (>2X hold time) reject (R) all non-detect results. Professional judgment used to qualify soils.

3.0 Laboratory Method **Yes [✓]** No [ ] N/A [ ] Comments:

3.1 Was the correct laboratory method used?

ACTION: If no, contact lab to provide justification for method change compared to the requested method. Contact senior chemist to inform Client of change or to request variance.

3.2 Are the practical quantitation limits the same as those specified by the ☐ QAPP/IRSWP ☐ Lab? **Yes** [✓] No [ ] N/A [ ] Comments:

Note: *The MADEP QA/QC Guidelines do not yet list PQLs for wet chemistry analyses, therefore all criteria will default to values stipulated in the QAPP*. Where the QAPP does not define criteria, QA/QC requirements default to limits employed by the lab**. Other criteria may also apply.*

Ammonia* ☑ = 0.1 mg/ L	Alkalinity** ☐ = 1 mg/L	Bicarbonate Alkalinity** ☐ = 1 mg/L	Carbonate Alkalinity** ☐ = 1 mg/L
Nitrate Nitrogen as N* ☐ = .05 mg/L	Nitrite Nitrogen as N* ☐ = .01 mg/L	Chloride* ☑ = 1 mg/L	Hardness *☐ = 2 mg/L
Spec. Cond.** ☑ 3 umhos/cm	Total Organic Carbon** ☐ = 1 mg/L	Oil & Grease* ☐ = 5.5 mg/L	Sulfate (EPA 300.0)* ☑ = 2 mg/L
COD:* Low – 20 mg/L	COD* High - 50 mg/L ☐	TDS* ☐ = 10 mg/L	TSS* ☐ = 5 mg/L
pH* ☐ <2 to > 12	Phenolic - 0.01 mg/L		

Other parameter(list) _____ PQL = _____ ☐ Source of PQL = _____

Other parameter(list) _____ PQL = _____ ☐ Source of PQL = _____

ACTION: If no, evaluate change with respect to sample matrix, preparation, dilution, moisture, etc. If sample PQL is indeterminate, contact lab for explanation.

3.3 Are the appropriate parameter results present for each sample in the SDG? **Yes** [✓] No [ ] N/A [ ] Comments:

ACTION: If no, check Request for Analysis to verify if method was ordered and COC to verify that it was sent, and contact lab for resubmission of the missing data

3.4 If *dilutions were required, were dilution factors reported?* **Yes** [✓] No [ ] N/A [ ] Comments:

ACTION: If no, contact the lab for submission.

4.0 Method Blanks **Yes** [✓] No [ ] N/A [ ] Comments:

4.1 Are the Method Blank Summaries present?

ACTION: If no, call the laboratory for submission of missing data.

4.2 Was a method blank analyzed for each analysis batch of wet chemistry field samples of 20 or less? **Yes** [✓] No [ ] N/A [ ] Comments:

ACTION: If no, document discrepancy in case narrative and contact lab for justification. Consult senior chemist for action needed.

4.3 Is the method blank less than the PQL? (See Section 3.2 for PQLs). **Yes [✓]** No [ ] N/A [ ] Comments:

4.4 Do any method blanks have positive results for wet chemistry parameters? Qualify data according to the following: Yes [ ] **No [✓]** N/A [ ] Comments:

If the sample concentration is < 5 × blank value, flag sample result non-detect "U" at the PQL or the concentration reported if greater than the PQL.

If the sample concentration is > 5 × blank value, no qualification is needed.

ACTION: If any blank has positive results, list all the concentrations detected and flagging level (flagging level = 5 × blank value) on the checklist. List all affected samples and their qualifiers.

5.0 Laboratory Control Standards

5.1 Was a laboratory control standard (LCS) run with each analytical batch of 20 samples or less? **Yes [✓]** No [ ] N/A [ ] Comments:

ACTION: If no, call laboratory for LCS form submittal. If data is not available, use professional judgment to determine qualification actions for data associated with the batch.

5.2 Is a LCS Summary Form present? **Yes [✓]** No [ ] N/A [ ] Comments:

ACTION: If no, contact lab for resubmission of missing data.

5.3 Is any wet chemistry analyte LCS recovery outside the control limits? Yes [ ] **No [✓]** N/A [ ] Comments:

LCS Limits:

Alkalinity** ☐ = 80-120%	Bicarbonate Alkalinity** ☐ = 80-120%	Carbonate Alkalinity** ☐ = 80-120%	Specific Conductivity *☑ = 80-120%
Total Organic Carbon** ☐ = 80-120%	TDS** ☐ = 80-120%	Oil & Grease* ☐ = 80-120%	Ammonia Nitrogen as N* ☑ = 80-120%
COD Low* ☐ = 80-120%	COD High* ☐ = 80-120%	Nitrate Nitrogen as N**☐ = 80-120%	Nitrite Nitrogen as N** ☐= 80-120%
Hardness* ☐ = 80-120%	Chloride* ☑ = 80-120%	Sulfate (EPA 300.0)* ☑ = 80-120%	pH* ☐ = 98-102% TSS* NA

Other parameter(list) _____ %R = _____ ☐ Rec Limits= _____

Other parameter(list) _____ %R = _____ ☐ Rec Limits = _____

(MADEP has not yet defined LCS recovery limits for wet chemistry analyses.)

ACTION: If recovery is above the upper limit, qualify all positive sample results within the batch as (J). If recovery is below the lower limit, qualify all positive and no-detect results within the batch as (J). If LCS recovery is <10%, non-detect results are rejected (R).

6.0 Matrix Spikes

Matrix spikes may be collected at different frequencies based on monthly, quarterly, or task specific schedules. Confirm spike requirements for each set with the senior chemist.

6.1 Were project-specific MS/MSDs analyzed? List project samples that were spiked.

ACTION: If no, contact senior chemist to see if any were specified.

Yes [__] No [✓] N/A [__] Comments:

6.2 Is the MS/MSD Recovery Form present?

ACTION: If no, contact lab for resubmission of missing data.

Yes [__] No [__] N/A [✓] Comments:

6.3 Were matrix spikes analyzed at the required frequency of 1 per 20 samples per matrix?

ACTION: If any matrix spike data is missing, call lab for resubmission.

Yes [__] No [__] N/A [✓] Comments:

6.4 Are any wet chemistry analyte spike recoveries outside of the QC limits?

Yes [__] **No** [__] N/A [✓] Comments:

NOTE: $\%R = \frac{(SSR-SR)}{SA} \times 100\%$ Where: SSR = Spiked sample result
SR = Sample result
SA = Spike added

MS/MSD Recovery Limits:

Alkalinity* = NA	Bicarbonate Alkalinity* = NA	Carbonate alkalinity* = NA	Ammonia* (LACHAT) ☐ = 75-125%
Chloride*(SM 4500 Cl) ☐= 75-125%	Specific Conductivity * = NA	Total Organic Carbon* = NA	TDS** = NA
Oil & Grease* = NA	COD Low* ☐ = 75-125%	COD High* ☐ = 75-125%	Nitrate Nitrogen as N** ☐ = 75-125%
Nitrite Nitrogen as N** ☐ = 75-125%	Hardness* ☐ = 75-125%	Sulfate (EPA 300.0)* ☐ = 75-125%	pH* = NA TSS* = NA

Other parameter(list) _____ % R = _____ ☐ Rec Limits = _____

* = Laboratory Limits ** = Olin QAPP Limits *(MADEP has not yet defined LCS recovery limits for wet chemistry analyses.)*

NOTES: 1) If only one of the recoveries for an MS/MSD pair is outside of the control limits, no qualification is necessary. Use professional judgment for the MS/MSD flags.
2) If the MS/MSD was performed by the laboratory on a non-project sample, no qualification is required.

ACTION: MS/MSD flags only apply to the sample spiked. Do not evaluate if sample concentration is > 4X spike. If the recoveries of the MS and MSD exceed the upper control limit, qualify positive results as estimated (J). If the recoveries of the MS and MSD are lower than the lower control limit but > 30%, qualify both positive results and non-detects (J). If the MS/MSD recovery is < 30% and the sample is non-detect, the results are considered unusable and flagged (R).

ACTION: Laboratory control limits apply when spiked sample results fall within the normal calibration range. If dilutions are required due to high sample concentrations, the data is evaluated, but no flags are applied.

6.5 Are any RPDs for MS/MSD recoveries outside of the QA/QC limits?

NOTE: $RPD = \frac{S-D}{(S+D)/2} \times 100\%$ Where S = MS result
D = MSD result

Yes [ ] **No** [ ] N/A [✓] Comments:

MS/MSD RPD Limits:

RPD ≤ 20

7.0 Laboratory Duplicate

Are the RPDs for the laboratory duplicates <20% unless otherwise specified below?

Yes [✓] No [ ] N/A [ ] Comments:

ACTION: If the RPD is greater than specified limits, qualify all results for that analyte as estimated (J).

pH* ☐ = 3% Specific Conductivity *☑ = 5% TSS** ☐ = 6% TDS** ☐ = 6%

8.0 Sampling Accuracy

The majority of ground water samples are collected directly from a tap, process stream, or with dedicated tubing. Rinse blanks will not be collected.

8.1 Were rinsate blanks collected? Prior to evaluating rinsate blanks, obtain a list of the associated samples from the senior chemist. **Yes** [ ] No [✓] N/A [ ] Comments:

8.2 Do any rinsate blanks have positive results? Yes [ ] **No** [ ] N/A [✓] Comments:

ACTION: Evaluate rinsate results vs. blank results to determine if contaminant may be laboratory-derived. If not lab-related, qualify according to the table below.

If the sample concentration is < 5 × blank value, flag sample result non-detect "U" at the PQL or the concentration reported if greater than the PQL.

If the sample concentration is > 5 × blank value, no qualification is needed.

***NOTE**: MADEP does not require the collection of rinsate blanks.*

9.0 Field Duplicates

9.1 Were field duplicate samples collected? Obtain a list of samples and their associated field duplicates. **Yes** [ ] No [✓] N/A [ ] Comments:

9.2 Were field duplicates collected per the required frequency? **Yes** [ ] No [ ] N/A [✓] Comments:

QAPP/IRSWP ☐ *MADEP Option 1(1 per 20)* ☐ *MADEP Option 3 (1 per 10)* ☐

9.3 Was the RPD ≤ 30% for waters ≤ 50% for soils? Calculate the RPD for results and attach to this review. **Yes** [ ] No [ ] N/A [✓] Comments:

ACTION:. Qualify data (J) for both sample results if the RPD exceeded.

Was any of the data qualified? Yes [ ] **No [✓]** N/A [ ] Comments:

If so, apply data qualifiers directly to the DQE copy of laboratory report and **flag pages** for entry in database.

REFERENCES:-

MACTEC, 2007. "Draft Interim Response Steps Work Plan"; Olin Chemical Superfund Site, 51 Eames Street, Wilmington, Massachusetts.; Project No. 6300-06-0010/41.1; July 25, 2007.

Massachusetts Department of Environmental Protection (MADEP), 2004. "The Compendium of Quality Assurance and Quality Control Requirements and Performance Standards for Selected Analytical Methods Used in Support of Response Actions for the Massachusetts Contingency Plan (MCP)"; Bureau of Waste Site Cleanup; 1 Winter Street, Boston, Massachusetts 02108; WSC-CAM; May 2004.

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

FILE COPY

ANALYTICAL REPORT

CHECKED FOR COMPLETENESS OF PARAMETERS ORDERED BY:

9/21/11

Job Number: 360-35898-1

Job Description: Olin Chemical Surfacewater Quarterly

For:
Olin Corporation
PO BOX 248
Charleston, TN 37310-0248

Attention: Mr. James Cashwell

Approved for release.
Joe Chimi
Report Production Representative
9/7/11 11:18 AM

Designee for
Becky C Mason
Project Manager II
becky.mason@testamericainc.com
09/07/2011

Results relate only to the items tested and the sample(s) as received by the laboratory. The test results in this report meet all NELAC requirements for accredited parameters, exceptions are noted in this report. Pursuant to NELAC, this report may not be reproduced except in full, and with written approval from the laboratory. TestAmerica Westfield Certifications and Approvals: MADEP MA014, RIDOH57, CTDPH 0494, VT DECWSD, NELAP NH DES 2539, NELAP NY 10843, NY ELAP 10843, North Carolina 647. Field sampling is performed under SOPs WE-FLD-001 and WE-FLD-002.

TestAmerica Laboratories, Inc.
TestAmerica Westfield Westfield Executive Park, 53 Southampton Road, Westfield, MA 01085
Tel (413) 572-4000 Fax (413) 572-3707 www.testamericainc.com

ACCREDITED IN ACCORDANCE WITH nelac

Table of Contents

MassDEP Analytical Protocol Certification Form

Laboratory Name: **TestAmerica Westfield** Project #: **360-35898-1**

Project Location: **Wilmington, MA** RTN:

This form provides certifications for the following data set: list Laboratory Sample ID Number(s):

360-35898-(1-7)

Matrices: [X] Groundwater/Surface Water [ ] Soil/Sediment [ ] Drinking Water [ ] Air [ ] Other:

CAM Protocols (check all that apply below):

8260 VOC CAM II A [ ]	7470/7471 Hg CAM III B [ ]	Mass DEP VPH CAM IV A [ ]	8081 Pesticides CAM V B [ ]	7196 Hex Cr CAM VI B [ ]	Mass DEP APH CAM IX A [ ]
8270 SVOC CAM II B [ ]	7010 Metals CAM III C [ ]	Mass DEP EPH CAM IV B [ ]	8151 Herbicides CAM V C [ ]	8330 Explosives CAM VIII A [ ]	TO-15 VOC CAM IX B [ ]
6010 Metals CAM III A [X]	6020 Metals CAM III D [ ]	8082 PCB CAM V A [ ]	9014 Total Cyanide/PAC CAM VI A [ ]	332.0 Perchlorate CAM VIII B [ ]	

Affirmative Responses to Questions A through F are required for "Presumptive Certainty" status

A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding time.	[X] Yes [ ] No
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	[X] Yes [ ] No
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	[X] Yes [ ] No
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"?	[X] Yes [ ] No
E	a. VPH, EPH and APH Methods only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications). b. APH and TO-15 Methods only: Was the complete analyte list reported for each method?	[ ] Yes [ ] No [ ] Yes [ ] No
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	[X] Yes [ ] No

Responses to Questions G, H and I below are required for "Presumptive Certainty" status

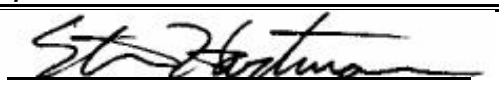
G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	[X] Yes [ ] No[1]

***Data User Note:* Data that achieve "Presumptive Certainty" status may not necessarily meet the data usability and representativeness requirements described in 310 CMR 40. 1056 (2)(k) and WCS-07-350**

H	Were **all** QC performance standards specified in the CAM protocol(s) achieved?	[X] Yes [ ] No
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s) ?	[ ] Yes [X] No

[1] All negative responses must be addressed in an attached laboratory narrative.

I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, is accurate and complete.

Signature:  Position: Laboratory Director

Printed Name: Steven C. Hartmann Date: 9/7/11 10:31

This form has been electronically signed and approved

CASE NARRATIVE

Client: Olin Corporation

Project: Olin Chemical Surfacewater Quarterly

Report Number: 360-35898-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT
The samples were received on 08/23/2011; the samples arrived in good condition, properly preserved and on ice. The temperatures of the coolers at receipt were 0.3 and 1.0 C.

TOTAL METALS (ICP)
Samples OC-SW-ISCO1 (360-35898-1), OC-SW-ISCO2 (360-35898-2), OC-SW-ISCO3 (360-35898-3), OC-SW-PZ-16RRSW (360-35898-4), OC-SW-PZ-17RRSW (360-35898-5), OC-SW-PZ-18RSW (360-35898-6) and OC-SW-SD-17 (360-35898-7) were analyzed for total metals (ICP) in accordance with EPA SW-846 Method 6010B. The samples were prepared on 08/25/2011 and analyzed on 08/26/2011.

At the request of the client, an abbreviated/modified MCP analyte list was reported for this job.

No difficulties were encountered during the metals analyses.

All quality control parameters were within the acceptance limits.

DISSOLVED METALS
Samples OC-SW-ISCO1 (360-35898-1), OC-SW-ISCO2 (360-35898-2), OC-SW-ISCO3 (360-35898-3), OC-SW-PZ-16RRSW (360-35898-4), OC-SW-PZ-17RRSW (360-35898-5), OC-SW-PZ-18RSW (360-35898-6) and OC-SW-SD-17 (360-35898-7) were analyzed for dissolved metals in accordance with EPA SW-846 Method 6010B. The samples were analyzed on 09/01/2011.

Sodium was detected in method blank MB 360-79397/2 at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate, and has been flagged “J”. If the associated sample reported a result above the MDL and/or RL, the result has been “B” flagged. Refer to the QC report for details.

At the request of the client, an abbreviated/modified MCP analyte list was reported for this job.

No other difficulties were encountered during the dissolved metals analyses.

All other quality control parameters were within the acceptance limits.

ANIONS (28 DAY HOLD TIME)
Samples OC-SW-ISCO1 (360-35898-1), OC-SW-ISCO2 (360-35898-2), OC-SW-ISCO3 (360-35898-3), OC-SW-PZ-16RRSW (360-35898-4), OC-SW-PZ-17RRSW (360-35898-5), OC-SW-PZ-18RSW (360-35898-6) and OC-SW-SD-17 (360-35898-7) were analyzed for anions (28 day hold time) in accordance with EPA Method 300.0. The samples were analyzed on 08/24/2011.

Samples OC-SW-ISCO1 (360-35898-1)[10X], OC-SW-ISCO2 (360-35898-2)[10X], OC-SW-ISCO3 (360-35898-3)[10X], OC-SW-PZ-16RRSW (360-35898-4)[10X], OC-SW-PZ-17RRSW (360-35898-5)[10X], OC-SW-PZ-18RSW (360-35898-6)[10X] and OC-SW-SD-17 (360-35898-7)[10X] required dilution prior to analysis due to high target concentration. The reporting limits have been adjusted accordingly.

No difficulties were encountered during the anions analyses.

All quality control parameters were within the acceptance limits.

ANIONS (48 HR HOLD TIME)
Samples OC-SW-ISCO1 (360-35898-1), OC-SW-ISCO2 (360-35898-2), OC-SW-ISCO3 (360-35898-3), OC-SW-PZ-16RRSW

(360-35898-4), OC-SW-PZ-17RRSW (360-35898-5), OC-SW-PZ-18RSW (360-35898-6) and OC-SW-SD-17 (360-35898-7) were analyzed for anions (48 hr hold time) in accordance with EPA Method 300.0. The samples were analyzed on 08/24/2011.

Samples OC-SW-ISCO1 (360-35898-1)[10X], OC-SW-ISCO2 (360-35898-2)[10X], OC-SW-ISCO3 (360-35898-3)[10X], OC-SW-PZ-16RRSW (360-35898-4)[10X], OC-SW-PZ-17RRSW (360-35898-5)[10X] and OC-SW-SD-17 (360-35898-7)[10X] required dilution prior to analysis due to the presence of elevated Chloride concentration, which co-elutes with the Nitrite peak. The reporting limits have been adjusted accordingly.

No difficulties were encountered during the anions analyses.

All quality control parameters were within the acceptance limits.

AMMONIA

Samples OC-SW-ISCO1 (360-35898-1), OC-SW-ISCO2 (360-35898-2), OC-SW-ISCO3 (360-35898-3), OC-SW-PZ-16RRSW (360-35898-4), OC-SW-PZ-17RRSW (360-35898-5), OC-SW-PZ-18RSW (360-35898-6) and OC-SW-SD-17 (360-35898-7) were analyzed for ammonia in accordance with Lachat 107-06-1B. The samples were prepared on 08/30/2011 and 09/02/2011 and analyzed on 08/30/2011 and 09/06/2011.

Ammonia failed the recovery criteria high for the MS and MSD of sample OC-SW-SD-17MS (360-35898-7) in batch 360-79587. The associated LCS recovered within control limits. Refer to the QC report for details.

Samples OC-SW-ISCO1 (360-35898-1)[10X], OC-SW-ISCO2 (360-35898-2)[10X], OC-SW-PZ-16RRSW (360-35898-4)[10X], OC-SW-PZ-17RRSW (360-35898-5)[10X], OC-SW-PZ-18RSW (360-35898-6)[5X] and OC-SW-SD-17 (360-35898-7)[5X] required dilution prior to analysis due to high concentration. The reporting limits have been adjusted accordingly.

No other difficulties were encountered during the ammonia analyses.

All other quality control parameters were within the acceptance limits.

SPECIFIC CONDUCTIVITY

Samples OC-SW-ISCO1 (360-35898-1), OC-SW-ISCO2 (360-35898-2), OC-SW-ISCO3 (360-35898-3), OC-SW-PZ-16RRSW (360-35898-4), OC-SW-PZ-17RRSW (360-35898-5), OC-SW-PZ-18RSW (360-35898-6) and OC-SW-SD-17 (360-35898-7) were analyzed for specific conductivity in accordance with SM20 2510B. The samples were analyzed on 09/01/2011.

No difficulties were encountered during the conductivity analyses.

All quality control parameters were within the acceptance limits.

EXECUTIVE SUMMARY - Detections

Client: Olin Corporation Job Number: 360-35898-1

Lab Sample ID / Analyte	Client Sample ID	Result	Qualifier	Reporting Limit	Units	Method
360-35898-1	**OC-SW-ISCO1**					
Aluminum		150		100	ug/L	6010B
Chromium		16		5.0	ug/L	6010B
Sodium		73000		2000	ug/L	6010B
Sulfate		130		20	mg/L	300.0
Nitrate as N		0.080		0.050	mg/L	300.0
Chloride		110		10	mg/L	300.0
Ammonia		37		1.0	mg/L	L107-06-1B
Specific Conductance		790		1.0	umhos/cm	SM 2510B
Dissolved						
Aluminum		40	J	100	ug/L	6010B
Chromium		8.6		5.0	ug/L	6010B
Sodium		90000	B	2000	ug/L	6010B
360-35898-2	**OC-SW-ISCO2**					
Aluminum		230		100	ug/L	6010B
Chromium		51		5.0	ug/L	6010B
Sodium		150000		2000	ug/L	6010B
Sulfate		580		20	mg/L	300.0
Nitrate as N		0.79		0.050	mg/L	300.0
Chloride		170		10	mg/L	300.0
Ammonia		98		1.0	mg/L	L107-06-1B
Specific Conductance		2200		1.0	umhos/cm	SM 2510B
Dissolved						
Aluminum		36	J	100	ug/L	6010B
Chromium		13		5.0	ug/L	6010B
Sodium		190000	B	2000	ug/L	6010B
360-35898-3	**OC-SW-ISCO3**					
Aluminum		53	J	100	ug/L	6010B
Chromium		1.2	J	5.0	ug/L	6010B
Sodium		82000		2000	ug/L	6010B
Sulfate		22		2.0	mg/L	300.0
Nitrate as N		0.70		0.050	mg/L	300.0
Chloride		200		10	mg/L	300.0
Ammonia		1.7		0.10	mg/L	L107-06-1B
Specific Conductance		800		1.0	umhos/cm	SM 2510B
Dissolved						
Sodium		99000	B	2000	ug/L	6010B

EXECUTIVE SUMMARY - Detections

Client: Olin Corporation

Job Number: 360-35898-1

Lab Sample ID / Analyte	Client Sample ID	Result	Qualifier	Reporting Limit	Units	Method
360-35898-4	**OC-SW-PZ-16RRSW**					
Aluminum		1900		100	ug/L	6010B
Chromium		560		5.0	ug/L	6010B
Sodium		160000		2000	ug/L	6010B
Sulfate		620		20	mg/L	300.0
Nitrate as N		0.39		0.050	mg/L	300.0
Chloride		190		10	mg/L	300.0
Ammonia		110		1.0	mg/L	L107-06-1B
Specific Conductance		2300		1.0	umhos/cm	SM 2510B
Dissolved						
Aluminum		1500		100	ug/L	6010B
Chromium		490		5.0	ug/L	6010B
Sodium		200000	B	2000	ug/L	6010B
360-35898-5	**OC-SW-PZ-17RRSW**					
Aluminum		5700		100	ug/L	6010B
Chromium		1300		5.0	ug/L	6010B
Sodium		160000		2000	ug/L	6010B
Sulfate		600		20	mg/L	300.0
Nitrate as N		0.18		0.050	mg/L	300.0
Chloride		190		10	mg/L	300.0
Ammonia		110		1.0	mg/L	L107-06-1B
Specific Conductance		2200		1.0	umhos/cm	SM 2510B
Dissolved						
Aluminum		1400		100	ug/L	6010B
Chromium		600		5.0	ug/L	6010B
Sodium		190000	B	2000	ug/L	6010B
360-35898-6	**OC-SW-PZ-18RSW**					
Aluminum		140		100	ug/L	6010B
Chromium		15		5.0	ug/L	6010B
Sodium		67000		2000	ug/L	6010B
Sulfate		130		20	mg/L	300.0
Nitrate as N		0.078		0.050	mg/L	300.0
Chloride		110		10	mg/L	300.0
Ammonia		33		0.50	mg/L	L107-06-1B
Specific Conductance		790		1.0	umhos/cm	SM 2510B
Dissolved						
Aluminum		36	J	100	ug/L	6010B
Chromium		8.2		5.0	ug/L	6010B
Sodium		89000	B	2000	ug/L	6010B

EXECUTIVE SUMMARY - Detections

Client: Olin Corporation

Job Number: 360-35898-1

Lab Sample ID / Analyte	Client Sample ID	Result	Qualifier	Reporting Limit	Units	Method
360-35898-7	**OC-SW-SD-17**					
Aluminum		1200		100	ug/L	6010B
Chromium		280		5.0	ug/L	6010B
Sodium		96000		2000	ug/L	6010B
Sulfate		240		20	mg/L	300.0
Nitrate as N		0.16		0.050	mg/L	300.0
Chloride		130		10	mg/L	300.0
Ammonia		41		0.50	mg/L	L107-06-1B
Specific Conductance		1100		1.0	umhos/cm	SM 2510B
Dissolved						
Aluminum		920		100	ug/L	6010B
Chromium		280		5.0	ug/L	6010B
Sodium		140000	B	2000	ug/L	6010B

METHOD SUMMARY

Client: Olin Corporation Job Number: 360-35898-1

Description	Lab Location	Method	Preparation Method
Matrix: Water			
Dissolved Metals	TAL WFD	SW846 6010B	
Sample Filtration, Field			FIELD_FLTRD
Total Metals	TAL WFD	SW846 6010B	
Preparation, Total Metals	TAL WFD		SW846 3010A
Chloride & Sulfate	TAL WFD	40CFR136A 300.0	
Nitrate & Nitrite	TAL WFD	40CFR136A 300.0	
Nitrogen Ammonia	TAL WFD	LACHAT L107-06-1B	
Distillation, Ammonia	TAL WFD		Distill/Ammonia
Conductivity, Specific Conductance	TAL WFD	SM SM 2510B	

Lab References:

TAL WFD = TestAmerica Westfield

Method References:

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

LACHAT = LACHAT

SM = "Standard Methods For The Examination Of Water And Wastewater",

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

METHOD / ANALYST SUMMARY

Client: Olin Corporation

Job Number: 360-35898-1

Method	Analyst	Analyst ID
SW846 6010B	Smith, Tim J	TJS
40CFR136A 300.0	Emerich, Rich W	RWE
LACHAT L107-06-1B	Emerich, Rich W	RWE
SM SM 2510B	Stewart, Alyse M	AMS

SAMPLE SUMMARY

Client: Olin Corporation

Job Number: 360-35898-1

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
360-35898-1	OC-SW-ISCO1	Water	08/23/2011 1025	08/23/2011 1645
360-35898-2	OC-SW-ISCO2	Water	08/23/2011 0915	08/23/2011 1645
360-35898-3	OC-SW-ISCO3	Water	08/23/2011 0900	08/23/2011 1645
360-35898-4	OC-SW-PZ-16RRSW	Water	08/23/2011 0925	08/23/2011 1645
360-35898-5	OC-SW-PZ-17RRSW	Water	08/23/2011 0940	08/23/2011 1645
360-35898-6	OC-SW-PZ-18RSW	Water	08/23/2011 1010	08/23/2011 1645
360-35898-7	OC-SW-SD-17	Water	08/23/2011 0950	08/23/2011 1645

SAMPLE RESULTS

Client: Olin Corporation Job Number: 360-35898-1

Client Sample ID: **OC-SW-ISCO1**

Lab Sample ID: 360-35898-1 Date Sampled: 08/23/2011 1025
Client Matrix: Water Date Received: 08/23/2011 1645

6010B Total Metals

Analysis Method:	6010B	Analysis Batch:	360-79049	Instrument ID:	Varian ICP
Prep Method:	3010A	Prep Batch:	360-78938	Lab File ID:	082611a.csv
Dilution:	1.0			Initial Weight/Volume:	50 mL
Analysis Date:	08/26/2011 1221			Final Weight/Volume:	50 mL
Prep Date:	08/25/2011 0735				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Aluminum	150		13	100
Chromium	16		0.65	5.0
Sodium	73000		280	2000

6010B Dissolved Metals-Dissolved

Analysis Method:	6010B	Analysis Batch:	360-79397	Instrument ID:	Varian ICP
	N/A		N/A	Lab File ID:	090111b.csv
Dilution:	1.0			Initial Weight/Volume:	1.0 mL
Analysis Date:	09/01/2011 1347			Final Weight/Volume:	1.0 mL
Prep Date:	N/A				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Aluminum	40	J	13	100
Chromium	8.6		0.65	5.0
Sodium	90000	B	280	2000

Client: Olin Corporation

Job Number: 360-35898-1

Client Sample ID: **OC-SW-ISCO2**

Lab Sample ID: 360-35898-2
Client Matrix: Water

Date Sampled: 08/23/2011 0915
Date Received: 08/23/2011 1645

6010B Total Metals

Analysis Method:	6010B	Analysis Batch:	360-79049	Instrument ID:	Varian ICP
Prep Method:	3010A	Prep Batch:	360-78938	Lab File ID:	082611a.csv
Dilution:	1.0			Initial Weight/Volume:	50 mL
Analysis Date:	08/26/2011 1223			Final Weight/Volume:	50 mL
Prep Date:	08/25/2011 0737				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Aluminum	230		13	100
Chromium	51		0.65	5.0
Sodium	150000		280	2000

6010B Dissolved Metals-Dissolved

Analysis Method:	6010B	Analysis Batch:	360-79397	Instrument ID:	Varian ICP
	N/A		N/A	Lab File ID:	090111b.csv
Dilution:	1.0			Initial Weight/Volume:	1.0 mL
Analysis Date:	09/01/2011 1359			Final Weight/Volume:	1.0 mL
Prep Date:	N/A				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Aluminum	36	J	13	100
Chromium	13		0.65	5.0
Sodium	190000	B	280	2000

Client: Olin Corporation

Job Number: 360-35898-1

Client Sample ID: **OC-SW-ISCO3**

Lab Sample ID: 360-35898-3
Client Matrix: Water

Date Sampled: 08/23/2011 0900
Date Received: 08/23/2011 1645

6010B Total Metals

Analysis Method:	6010B	Analysis Batch:	360-79049	Instrument ID:	Varian ICP
Prep Method:	3010A	Prep Batch:	360-78938	Lab File ID:	082611a.csv
Dilution:	1.0			Initial Weight/Volume:	50 mL
Analysis Date:	08/26/2011 1232			Final Weight/Volume:	50 mL
Prep Date:	08/25/2011 0737				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Aluminum	53	J	13	100
Chromium	1.2	J	0.65	5.0
Sodium	82000		280	2000

6010B Dissolved Metals-Dissolved

Analysis Method:	6010B	Analysis Batch:	360-79397	Instrument ID:	Varian ICP
	N/A		N/A	Lab File ID:	090111b.csv
Dilution:	1.0			Initial Weight/Volume:	1.0 mL
Analysis Date:	09/01/2011 1408			Final Weight/Volume:	1.0 mL
Prep Date:	N/A				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Aluminum	ND		13	100
Chromium	ND		0.65	5.0
Sodium	99000	B	280	2000

Client: Olin Corporation

Job Number: 360-35898-1

Client Sample ID: **OC-SW-PZ-16RRSW**

Lab Sample ID: 360-35898-4
Client Matrix: Water

Date Sampled: 08/23/2011 0925
Date Received: 08/23/2011 1645

6010B Total Metals

Analysis Method:	6010B	Analysis Batch:	360-79049	Instrument ID:	Varian ICP
Prep Method:	3010A	Prep Batch:	360-78938	Lab File ID:	082611a.csv
Dilution:	1.0			Initial Weight/Volume:	50 mL
Analysis Date:	08/26/2011 1235			Final Weight/Volume:	50 mL
Prep Date:	08/25/2011 0737				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Aluminum	1900		13	100
Chromium	560		0.65	5.0
Sodium	160000		280	2000

6010B Dissolved Metals-Dissolved

Analysis Method:	6010B	Analysis Batch:	360-79397	Instrument ID:	Varian ICP
	N/A		N/A	Lab File ID:	090111b.csv
Dilution:	1.0			Initial Weight/Volume:	1.0 mL
Analysis Date:	09/01/2011 1411			Final Weight/Volume:	1.0 mL
Prep Date:	N/A				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Aluminum	1500		13	100
Chromium	490		0.65	5.0
Sodium	200000	B	280	2000

Client: Olin Corporation

Job Number: 360-35898-1

Client Sample ID: **OC-SW-PZ-17RRSW**

Lab Sample ID: 360-35898-5
Client Matrix: Water

Date Sampled: 08/23/2011 0940
Date Received: 08/23/2011 1645

6010B Total Metals

Analysis Method:	6010B	Analysis Batch:	360-79049	Instrument ID:	Varian ICP
Prep Method:	3010A	Prep Batch:	360-78938	Lab File ID:	082611a.csv
Dilution:	1.0			Initial Weight/Volume:	50 mL
Analysis Date:	08/26/2011 1238			Final Weight/Volume:	50 mL
Prep Date:	08/25/2011 0737				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Aluminum	5700		13	100
Chromium	1300		0.65	5.0
Sodium	160000		280	2000

6010B Dissolved Metals-Dissolved

Analysis Method:	6010B	Analysis Batch:	360-79397	Instrument ID:	Varian ICP
	N/A		N/A	Lab File ID:	090111b.csv
Dilution:	1.0			Initial Weight/Volume:	1.0 mL
Analysis Date:	09/01/2011 1414			Final Weight/Volume:	1.0 mL
Prep Date:	N/A				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Aluminum	1400		13	100
Chromium	600		0.65	5.0
Sodium	190000	B	280	2000

Client: Olin Corporation

Job Number: 360-35898-1

Client Sample ID: **OC-SW-PZ-18RSW**

Lab Sample ID: 360-35898-6
Client Matrix: Water

Date Sampled: 08/23/2011 1010
Date Received: 08/23/2011 1645

6010B Total Metals

Analysis Method:	6010B	Analysis Batch:	360-79049	Instrument ID:	Varian ICP
Prep Method:	3010A	Prep Batch:	360-78938	Lab File ID:	082611a.csv
Dilution:	1.0			Initial Weight/Volume:	50 mL
Analysis Date:	08/26/2011 1241			Final Weight/Volume:	50 mL
Prep Date:	08/25/2011 0737				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Aluminum	140		13	100
Chromium	15		0.65	5.0
Sodium	67000		280	2000

6010B Dissolved Metals-Dissolved

Analysis Method:	6010B	Analysis Batch:	360-79397	Instrument ID:	Varian ICP
	N/A		N/A	Lab File ID:	090111b.csv
Dilution:	1.0			Initial Weight/Volume:	1.0 mL
Analysis Date:	09/01/2011 1418			Final Weight/Volume:	1.0 mL
Prep Date:	N/A				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Aluminum	36	J	13	100
Chromium	8.2		0.65	5.0
Sodium	89000	B	280	2000

Client: Olin Corporation

Job Number: 360-35898-1

Client Sample ID: **OC-SW-SD-17**

Lab Sample ID: 360-35898-7
Client Matrix: Water

Date Sampled: 08/23/2011 0950
Date Received: 08/23/2011 1645

6010B Total Metals

Analysis Method:	6010B	Analysis Batch:	360-79049	Instrument ID:	Varian ICP
Prep Method:	3010A	Prep Batch:	360-78938	Lab File ID:	082611a.csv
Dilution:	1.0			Initial Weight/Volume:	50 mL
Analysis Date:	08/26/2011 1244			Final Weight/Volume:	50 mL
Prep Date:	08/25/2011 0737				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Aluminum	1200		13	100
Chromium	280		0.65	5.0
Sodium	96000		280	2000

6010B Dissolved Metals-Dissolved

Analysis Method:	6010B	Analysis Batch:	360-79397	Instrument ID:	Varian ICP
	N/A		N/A	Lab File ID:	090111b.csv
Dilution:	1.0			Initial Weight/Volume:	1.0 mL
Analysis Date:	09/01/2011 1421			Final Weight/Volume:	1.0 mL
Prep Date:	N/A				

Analyte	Result (ug/L)	Qualifier	MDL	RL
Aluminum	920		13	100
Chromium	280		0.65	5.0
Sodium	140000	B	280	2000

General Chemistry

Client Sample ID: **OC-SW-ISCO1**

Lab Sample ID: 360-35898-1 Date Sampled: 08/23/2011 1025
Client Matrix: Water Date Received: 08/23/2011 1645

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Nitrate as N	0.080		mg/L	0.050	0.050	1.0	300.0
Analysis Batch: 360-79061	Analysis Date: 08/24/2011 1855						
Sulfate	130		mg/L	20	20	10	300.0
Analysis Batch: 360-79030	Analysis Date: 08/24/2011 1911						
Chloride	110		mg/L	10	10	10	300.0
Analysis Batch: 360-79030	Analysis Date: 08/24/2011 1911						
Nitrite as N	ND		mg/L	0.10	0.10	10	300.0
Analysis Batch: 360-79065	Analysis Date: 08/24/2011 1911						
Ammonia	37		mg/L	1.0	1.0	10	L107-06-1B
Analysis Batch: 360-79216	Analysis Date: 08/30/2011 1541						
Prep Batch: 360-79183	Prep Date: 08/30/2011 1154						
Specific Conductance	790		umhos/cm	1.0	1.0	1.0	SM 2510B
Analysis Batch: 360-79387	Analysis Date: 09/01/2011 1215						

General Chemistry

Client Sample ID: **OC-SW-ISCO2**

Lab Sample ID: 360-35898-2 Date Sampled: 08/23/2011 0915
Client Matrix: Water Date Received: 08/23/2011 1645

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Nitrate as N	0.79		mg/L	0.050	0.050	1.0	300.0
Analysis Batch: 360-79061	Analysis Date: 08/24/2011 1959						
Sulfate	580		mg/L	20	20	10	300.0
Analysis Batch: 360-79030	Analysis Date: 08/24/2011 2015						
Chloride	170		mg/L	10	10	10	300.0
Analysis Batch: 360-79030	Analysis Date: 08/24/2011 2015						
Nitrite as N	ND		mg/L	0.10	0.10	10	300.0
Analysis Batch: 360-79065	Analysis Date: 08/24/2011 2015						
Ammonia	98		mg/L	1.0	1.0	10	L107-06-1B
Analysis Batch: 360-79216	Analysis Date: 08/30/2011 1542						
Prep Batch: 360-79183	Prep Date: 08/30/2011 1154						
Specific Conductance	2200		umhos/cm	1.0	1.0	1.0	SM 2510B
Analysis Batch: 360-79387	Analysis Date: 09/01/2011 1215						

General Chemistry

Client Sample ID: **OC-SW-ISCO3**

Lab Sample ID: 360-35898-3 Date Sampled: 08/23/2011 0900
Client Matrix: Water Date Received: 08/23/2011 1645

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Nitrate as N	0.70		mg/L	0.050	0.050	1.0	300.0
Analysis Batch: 360-79061	Analysis Date: 08/24/2011 2032						
Sulfate	22		mg/L	2.0	2.0	1.0	300.0
Analysis Batch: 360-79030	Analysis Date: 08/24/2011 2032						
Chloride	200		mg/L	10	10	10	300.0
Analysis Batch: 360-79030	Analysis Date: 08/24/2011 2048						
Nitrite as N	ND		mg/L	0.10	0.10	10	300.0
Analysis Batch: 360-79065	Analysis Date: 08/24/2011 2048						
Ammonia	1.7		mg/L	0.10	0.10	1.0	L107-06-1B
Analysis Batch: 360-79216	Analysis Date: 08/30/2011 1516						
Prep Batch: 360-79183	Prep Date: 08/30/2011 1154						
Specific Conductance	800		umhos/cm	1.0	1.0	1.0	SM 2510B
Analysis Batch: 360-79387	Analysis Date: 09/01/2011 1215						

General Chemistry

Client Sample ID: **OC-SW-PZ-16RRSW**

Lab Sample ID: 360-35898-4 Date Sampled: 08/23/2011 0925
Client Matrix: Water Date Received: 08/23/2011 1645

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Nitrate as N	0.39		mg/L	0.050	0.050	1.0	300.0
Analysis Batch: 360-79061	Analysis Date: 08/24/2011 2104						
Sulfate	620		mg/L	20	20	10	300.0
Analysis Batch: 360-79030	Analysis Date: 08/24/2011 2120						
Chloride	190		mg/L	10	10	10	300.0
Analysis Batch: 360-79030	Analysis Date: 08/24/2011 2120						
Nitrite as N	ND		mg/L	0.10	0.10	10	300.0
Analysis Batch: 360-79065	Analysis Date: 08/24/2011 2120						
Ammonia	110		mg/L	1.0	1.0	10	L107-06-1B
Analysis Batch: 360-79216	Analysis Date: 08/30/2011 1543						
Prep Batch: 360-79183	Prep Date: 08/30/2011 1154						
Specific Conductance	2300		umhos/cm	1.0	1.0	1.0	SM 2510B
Analysis Batch: 360-79387	Analysis Date: 09/01/2011 1215						

General Chemistry

Client Sample ID: **OC-SW-PZ-17RRSW**

Lab Sample ID: 360-35898-5 Date Sampled: 08/23/2011 0940
Client Matrix: Water Date Received: 08/23/2011 1645

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Nitrate as N	0.18		mg/L	0.050	0.050	1.0	300.0
Analysis Batch: 360-79061	Analysis Date: 08/24/2011 2208						
Sulfate	600		mg/L	20	20	10	300.0
Analysis Batch: 360-79030	Analysis Date: 08/24/2011 2224						
Chloride	190		mg/L	10	10	10	300.0
Analysis Batch: 360-79030	Analysis Date: 08/24/2011 2224						
Nitrite as N	ND		mg/L	0.10	0.10	10	300.0
Analysis Batch: 360-79065	Analysis Date: 08/24/2011 2224						
Ammonia	110		mg/L	1.0	1.0	10	L107-06-1B
Analysis Batch: 360-79216	Analysis Date: 08/30/2011 1544						
Prep Batch: 360-79183	Prep Date: 08/30/2011 1154						
Specific Conductance	2200		umhos/cm	1.0	1.0	1.0	SM 2510B
Analysis Batch: 360-79387	Analysis Date: 09/01/2011 1215						

General Chemistry

Client Sample ID: **OC-SW-PZ-18RSW**

Lab Sample ID: 360-35898-6 Date Sampled: 08/23/2011 1010
Client Matrix: Water Date Received: 08/23/2011 1645

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Nitrate as N	0.078		mg/L	0.050	0.050	1.0	300.0
Analysis Batch: 360-79061	Analysis Date: 08/24/2011 2240						
Sulfate	130		mg/L	20	20	10	300.0
Analysis Batch: 360-79030	Analysis Date: 08/24/2011 2256						
Chloride	110		mg/L	10	10	10	300.0
Analysis Batch: 360-79030	Analysis Date: 08/24/2011 2256						
Nitrite as N	ND		mg/L	0.010	0.010	1.0	300.0
Analysis Batch: 360-79065	Analysis Date: 08/24/2011 2240						
Ammonia	33		mg/L	0.50	0.50	5.0	L107-06-1B
Analysis Batch: 360-79216	Analysis Date: 08/30/2011 1545						
Prep Batch: 360-79183	Prep Date: 08/30/2011 1154						
Specific Conductance	790		umhos/cm	1.0	1.0	1.0	SM 2510B
Analysis Batch: 360-79387	Analysis Date: 09/01/2011 1215						

General Chemistry

Client Sample ID: **OC-SW-SD-17**

Lab Sample ID: 360-35898-7 Date Sampled: 08/23/2011 0950
Client Matrix: Water Date Received: 08/23/2011 1645

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Nitrate as N	0.16		mg/L	0.050	0.050	1.0	300.0
Analysis Batch: 360-79061	Analysis Date: 08/24/2011 2313						
Sulfate	240		mg/L	20	20	10	300.0
Analysis Batch: 360-79030	Analysis Date: 08/24/2011 2329						
Chloride	130		mg/L	10	10	10	300.0
Analysis Batch: 360-79030	Analysis Date: 08/24/2011 2329						
Nitrite as N	ND		mg/L	0.10	0.10	10	300.0
Analysis Batch: 360-79065	Analysis Date: 08/24/2011 2329						
Ammonia	41		mg/L	0.50	0.50	5.0	L107-06-1B
Analysis Batch: 360-79587	Analysis Date: 09/06/2011 1511						
Prep Batch: 360-79479	Prep Date: 09/02/2011 1415						
Specific Conductance	1100		umhos/cm	1.0	1.0	1.0	SM 2510B
Analysis Batch: 360-79387	Analysis Date: 09/01/2011 1215						

DATA REPORTING QUALIFIERS

Client: Olin Corporation Job Number: 360-35898-1

Lab Section	Qualifier	Description
Metals		
	B	Compound was found in the blank and sample.
	4	MS, MSD: The analyte present in the original sample is 4 times greater than the matrix spike concentration; therefore, control limits are not applicable.
	J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
General Chemistry		
	4	MS, MSD: The analyte present in the original sample is 4 times greater than the matrix spike concentration; therefore, control limits are not applicable.

QUALITY CONTROL RESULTS

Client: Olin Corporation

Job Number: 360-35898-1

QC Association Summary

Lab Sample ID	Client Sample ID	Report Basis	Client Matrix	Method	Prep Batch
Metals					
Prep Batch: 360-78938					
LCS 360-78938/2-A	Lab Control Sample	T	Water	3010A	
LCSD 360-78938/3-A	Lab Control Sample Duplicate	T	Water	3010A	
MB 360-78938/1-A	Method Blank	T	Water	3010A	
360-35898-1	OC-SW-ISCO1	T	Water	3010A	
360-35898-2	OC-SW-ISCO2	T	Water	3010A	
360-35898-3	OC-SW-ISCO3	T	Water	3010A	
360-35898-4	OC-SW-PZ-16RRSW	T	Water	3010A	
360-35898-5	OC-SW-PZ-17RRSW	T	Water	3010A	
360-35898-6	OC-SW-PZ-18RSW	T	Water	3010A	
360-35898-7	OC-SW-SD-17	T	Water	3010A	
Analysis Batch:360-79049					
LCS 360-78938/2-A	Lab Control Sample	T	Water	6010B	360-78938
LCSD 360-78938/3-A	Lab Control Sample Duplicate	T	Water	6010B	360-78938
MB 360-78938/1-A	Method Blank	T	Water	6010B	360-78938
360-35898-1	OC-SW-ISCO1	T	Water	6010B	360-78938
360-35898-2	OC-SW-ISCO2	T	Water	6010B	360-78938
360-35898-3	OC-SW-ISCO3	T	Water	6010B	360-78938
360-35898-4	OC-SW-PZ-16RRSW	T	Water	6010B	360-78938
360-35898-5	OC-SW-PZ-17RRSW	T	Water	6010B	360-78938
360-35898-6	OC-SW-PZ-18RSW	T	Water	6010B	360-78938
360-35898-7	OC-SW-SD-17	T	Water	6010B	360-78938
Analysis Batch:360-79397					
LCS 360-79397/1	Lab Control Sample	T	Water	6010B	
LCSD 360-79397/8	Lab Control Sample Duplicate	T	Water	6010B	
MB 360-79397/2	Method Blank	T	Water	6010B	
360-35898-1	OC-SW-ISCO1	D	Water	6010B	
360-35898-1DU	Duplicate	D	Water	6010B	
360-35898-1MS	Matrix Spike	D	Water	6010B	
360-35898-2	OC-SW-ISCO2	D	Water	6010B	
360-35898-3	OC-SW-ISCO3	D	Water	6010B	
360-35898-4	OC-SW-PZ-16RRSW	D	Water	6010B	
360-35898-5	OC-SW-PZ-17RRSW	D	Water	6010B	
360-35898-6	OC-SW-PZ-18RSW	D	Water	6010B	
360-35898-7	OC-SW-SD-17	D	Water	6010B	

Report Basis

D = Dissolved

T = Total

Client: Olin Corporation

Job Number: 360-35898-1

QC Association Summary

Lab Sample ID	Client Sample ID	Report Basis	Client Matrix	Method	Prep Batch
General Chemistry					
Analysis Batch:360-79030					
LCS 360-79030/4	Lab Control Sample	T	Water	300.0	
MB 360-79030/3	Method Blank	T	Water	300.0	
360-35898-1	OC-SW-ISCO1	T	Water	300.0	
360-35898-1MS	Matrix Spike	T	Water	300.0	
360-35898-1MSD	Matrix Spike Duplicate	T	Water	300.0	
360-35898-2	OC-SW-ISCO2	T	Water	300.0	
360-35898-3	OC-SW-ISCO3	T	Water	300.0	
360-35898-4	OC-SW-PZ-16RRSW	T	Water	300.0	
360-35898-5	OC-SW-PZ-17RRSW	T	Water	300.0	
360-35898-6	OC-SW-PZ-18RSW	T	Water	300.0	
360-35898-7	OC-SW-SD-17	T	Water	300.0	
Analysis Batch:360-79061					
LCS 360-79061/5	Lab Control Sample	T	Water	300.0	
MB 360-79061/4	Method Blank	T	Water	300.0	
360-35898-1	OC-SW-ISCO1	T	Water	300.0	
360-35898-1MS	Matrix Spike	T	Water	300.0	
360-35898-1MSD	Matrix Spike Duplicate	T	Water	300.0	
360-35898-2	OC-SW-ISCO2	T	Water	300.0	
360-35898-3	OC-SW-ISCO3	T	Water	300.0	
360-35898-4	OC-SW-PZ-16RRSW	T	Water	300.0	
360-35898-5	OC-SW-PZ-17RRSW	T	Water	300.0	
360-35898-6	OC-SW-PZ-18RSW	T	Water	300.0	
360-35898-7	OC-SW-SD-17	T	Water	300.0	
Analysis Batch:360-79065					
LCS 360-79065/5	Lab Control Sample	T	Water	300.0	
MB 360-79065/4	Method Blank	T	Water	300.0	
360-35898-1	OC-SW-ISCO1	T	Water	300.0	
360-35898-1MS	Matrix Spike	T	Water	300.0	
360-35898-1MSD	Matrix Spike Duplicate	T	Water	300.0	
360-35898-2	OC-SW-ISCO2	T	Water	300.0	
360-35898-3	OC-SW-ISCO3	T	Water	300.0	
360-35898-4	OC-SW-PZ-16RRSW	T	Water	300.0	
360-35898-5	OC-SW-PZ-17RRSW	T	Water	300.0	
360-35898-6	OC-SW-PZ-18RSW	T	Water	300.0	
360-35898-7	OC-SW-SD-17	T	Water	300.0	

Client: Olin Corporation

Job Number: 360-35898-1

QC Association Summary

Lab Sample ID	Client Sample ID	Report Basis	Client Matrix	Method	Prep Batch
General Chemistry					
Prep Batch: 360-79183					
LCS 360-79183/2-A	Lab Control Sample	T	Water	Distill/Ammonia	
MB 360-79183/1-A	Method Blank	T	Water	Distill/Ammonia	
360-35898-1	OC-SW-ISCO1	T	Water	Distill/Ammonia	
360-35898-2	OC-SW-ISCO2	T	Water	Distill/Ammonia	
360-35898-3	OC-SW-ISCO3	T	Water	Distill/Ammonia	
360-35898-4	OC-SW-PZ-16RRSW	T	Water	Distill/Ammonia	
360-35898-5	OC-SW-PZ-17RRSW	T	Water	Distill/Ammonia	
360-35898-6	OC-SW-PZ-18RSW	T	Water	Distill/Ammonia	
Analysis Batch:360-79216					
LCS 360-79183/2-A	Lab Control Sample	T	Water	L107-06-1B	360-79183
MB 360-79183/1-A	Method Blank	T	Water	L107-06-1B	360-79183
360-35898-1	OC-SW-ISCO1	T	Water	L107-06-1B	360-79183
360-35898-2	OC-SW-ISCO2	T	Water	L107-06-1B	360-79183
360-35898-3	OC-SW-ISCO3	T	Water	L107-06-1B	360-79183
360-35898-4	OC-SW-PZ-16RRSW	T	Water	L107-06-1B	360-79183
360-35898-5	OC-SW-PZ-17RRSW	T	Water	L107-06-1B	360-79183
360-35898-6	OC-SW-PZ-18RSW	T	Water	L107-06-1B	360-79183
Analysis Batch:360-79387					
LCS 360-79387/2	Lab Control Sample	T	Water	SM 2510B	
MB 360-79387/1	Method Blank	T	Water	SM 2510B	
360-35898-1	OC-SW-ISCO1	T	Water	SM 2510B	
360-35898-1DU	Duplicate	T	Water	SM 2510B	
360-35898-2	OC-SW-ISCO2	T	Water	SM 2510B	
360-35898-3	OC-SW-ISCO3	T	Water	SM 2510B	
360-35898-4	OC-SW-PZ-16RRSW	T	Water	SM 2510B	
360-35898-5	OC-SW-PZ-17RRSW	T	Water	SM 2510B	
360-35898-6	OC-SW-PZ-18RSW	T	Water	SM 2510B	
360-35898-7	OC-SW-SD-17	T	Water	SM 2510B	
Prep Batch: 360-79479					
LCS 360-79479/2-A	Lab Control Sample	T	Water	Distill/Ammonia	
MB 360-79479/1-A	Method Blank	T	Water	Distill/Ammonia	
360-35898-7	OC-SW-SD-17	T	Water	Distill/Ammonia	
360-35898-7MS	Matrix Spike	T	Water	Distill/Ammonia	
360-35898-7MSD	Matrix Spike Duplicate	T	Water	Distill/Ammonia	
Analysis Batch:360-79587					
LCS 360-79479/2-A	Lab Control Sample	T	Water	L107-06-1B	360-79479
MB 360-79479/1-A	Method Blank	T	Water	L107-06-1B	360-79479
360-35898-7	OC-SW-SD-17	T	Water	L107-06-1B	360-79479
360-35898-7MS	Matrix Spike	T	Water	L107-06-1B	360-79479
360-35898-7MSD	Matrix Spike Duplicate	T	Water	L107-06-1B	360-79479

Client: Olin Corporation

Job Number: 360-35898-1

QC Association Summary

Lab Sample ID	Client Sample ID	Report Basis	Client Matrix	Method	Prep Batch

Report Basis
T = Total

Client: Olin Corporation

Job Number: 360-35898-1

Method Blank - Batch: 360-78938

Method: 6010B
Preparation: 3010A

Lab Sample ID:	MB 360-78938/1-A	Analysis Batch:	360-79049	Instrument ID:	Varian ICP
Client Matrix:	Water	Prep Batch:	360-78938	Lab File ID:	082611a.csv
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	50 mL
Analysis Date:	08/26/2011 1134	Units:	ug/L	Final Weight/Volume:	50 mL
Prep Date:	08/25/2011 0735				
Leach Date:	N/A				

Analyte	Result	Qual	MDL	RL
Aluminum	ND		13	100
Chromium	ND		0.65	5.0
Sodium	ND		280	2000

Lab Control Sample/
Lab Control Sample Duplicate Recovery Report - Batch: 360-78938

Method: 6010B
Preparation: 3010A

LCS Lab Sample ID:	LCS 360-78938/2-A	Analysis Batch:	360-79049	Instrument ID:	Varian ICP
Client Matrix:	Water	Prep Batch:	360-78938	Lab File ID:	082611a.csv
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	50 mL
Analysis Date:	08/26/2011 1137	Units:	ug/L	Final Weight/Volume:	50 mL
Prep Date:	08/25/2011 0735				
Leach Date:	N/A				

LCSD Lab Sample ID:	LCSD 360-78938/3-A	Analysis Batch:	360-79049	Instrument ID:	Varian ICP
Client Matrix:	Water	Prep Batch:	360-78938	Lab File ID:	082611a.csv
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	50 mL
Analysis Date:	08/26/2011 1140	Units:	ug/L	Final Weight/Volume:	50 mL
Prep Date:	08/25/2011 0735				
Leach Date:	N/A				

	% Rec.						
Analyte	LCS	LCSD	Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
Aluminum	99	99	80 - 120	0	20		
Chromium	100	99	80 - 120	0	20		
Sodium	95	95	80 - 120	0	20		

Client: Olin Corporation

Job Number: 360-35898-1

Method Blank - Batch: 360-79397

Method: 6010B
Preparation: N/A

Lab Sample ID:	MB 360-79397/2	Analysis Batch:	360-79397	Instrument ID:	Varian ICP
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	090111b.csv
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.0 mL
Analysis Date:	09/01/2011 1211	Units:	ug/L	Final Weight/Volume:	1.0 mL
Prep Date:	N/A				
Leach Date:	N/A				

Analyte	Result	Qual	MDL	RL
Aluminum	ND		13	100
Chromium	ND		0.65	5.0
Sodium	355	J	280	2000

Lab Control Sample/
Lab Control Sample Duplicate Recovery Report - Batch: 360-79397

Method: 6010B
Preparation: N/A

LCS Lab Sample ID:	LCS 360-79397/1	Analysis Batch:	360-79397	Instrument ID:	Varian ICP
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	090111b.csv
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.0 mL
Analysis Date:	09/01/2011 1209	Units:	ug/L	Final Weight/Volume:	10 mL
Prep Date:	N/A				
Leach Date:	N/A				

LCSD Lab Sample ID:	LCSD 360-79397/8	Analysis Batch:	360-79397	Instrument ID:	Varian ICP
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	090111b.csv
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.0 mL
Analysis Date:	09/01/2011 1402	Units:	ug/L	Final Weight/Volume:	10 mL
Prep Date:	N/A				
Leach Date:	N/A				

	% Rec.						
Analyte	LCS	LCSD	Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
Aluminum	99	103	80 - 120	3	20		
Chromium	98	101	80 - 120	4	20		
Sodium	94	97	80 - 120	3	20		

Client: Olin Corporation

Job Number: 360-35898-1

Matrix Spike - Batch: 360-79397

Method: 6010B
Preparation: N/A

Lab Sample ID:	360-35898-1	Analysis Batch:	360-79397	Instrument ID:	Varian ICP
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	090111b.csv
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.0 mL
Analysis Date:	09/01/2011 1353	Units:	ug/L	Final Weight/Volume:	10 mL
Prep Date:	N/A				
Leach Date:	N/A				

Analyte	Sample Result/Qual		Spike Amount	Result	% Rec.	Limit	Qual
Aluminum	40	J	5000	5130	102	75 - 125	
Chromium	8.6		1000	1000	99	75 - 125	
Sodium	90000		20000	106000	76	75 - 125	4

Duplicate - Batch: 360-79397

Method: 6010B
Preparation: N/A

Lab Sample ID:	360-35898-1	Analysis Batch:	360-79397	Instrument ID:	Varian ICP
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	090111b.csv
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.0 mL
Analysis Date:	09/01/2011 1350	Units:	ug/L	Final Weight/Volume:	1.0 mL
Prep Date:	N/A				
Leach Date:	N/A				

Analyte	Sample Result/Qual		Result	RPD	Limit	Qual
Aluminum	40	J	39.8	1	20	J
Chromium	8.6		8.58	0.2	20	
Sodium	90000		89400	1	20	

Client: Olin Corporation Job Number: 360-35898-1

Method Blank - Batch: 360-79030

Method: 300.0
Preparation: N/A

Lab Sample ID:	MB 360-79030/3	Analysis Batch:	360-79030	Instrument ID:	Lachat 8500
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	N/A
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.0 mL
Analysis Date:	08/24/2011 1823	Units:	mg/L	Final Weight/Volume:	1.0 mL
Prep Date:	N/A				
Leach Date:	N/A				

Analyte	Result	Qual	RL	RL
Sulfate	ND		2.0	2.0
Chloride	ND		1.0	1.0

Lab Control Sample - Batch: 360-79030

Method: 300.0
Preparation: N/A

Lab Sample ID:	LCS 360-79030/4	Analysis Batch:	360-79030	Instrument ID:	Lachat 8500
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	N/A
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.0 mL
Analysis Date:	08/24/2011 1839	Units:	mg/L	Final Weight/Volume:	10 mL
Prep Date:	N/A				
Leach Date:	N/A				

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Sulfate	80.0	82.7	103	85 - 115	
Chloride	40.0	41.4	103	85 - 115	

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 360-79030

Method: 300.0
Preparation: N/A

MS Lab Sample ID:	360-35898-1	Analysis Batch:	360-79030	Instrument ID:	Lachat 8500
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	N/A
Dilution:	10	Leach Batch:	N/A	Initial Weight/Volume:	1.0 mL
Analysis Date:	08/24/2011 1927			Final Weight/Volume:	10 mL
Prep Date:	N/A				
Leach Date:	N/A				

MSD Lab Sample ID:	360-35898-1	Analysis Batch:	360-79030	Instrument ID:	Lachat 8500
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	N/A
Dilution:	10	Leach Batch:	N/A	Initial Weight/Volume:	1.0 mL
Analysis Date:	08/24/2011 1943			Final Weight/Volume:	10 mL
Prep Date:	N/A				
Leach Date:	N/A				

	% Rec.						
Analyte	MS	MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
Sulfate	104	104	75 - 125	0	20		
Chloride	118	118	75 - 125	0	20		

Client: Olin Corporation

Job Number: 360-35898-1

Method Blank - Batch: 360-79061

Method: 300.0
Preparation: N/A

Lab Sample ID:	MB 360-79061/4	Analysis Batch:	360-79061	Instrument ID:	Lachat 8500
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	N/A
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.0 mL
Analysis Date:	08/24/2011 1823	Units:	mg/L	Final Weight/Volume:	1.0 mL
Prep Date:	N/A				
Leach Date:	N/A				

Analyte	Result	Qual	RL	RL
Nitrate as N	ND		0.050	0.050

Lab Control Sample - Batch: 360-79061

Method: 300.0
Preparation: N/A

Lab Sample ID:	LCS 360-79061/5	Analysis Batch:	360-79061	Instrument ID:	Lachat 8500
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	N/A
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.0 mL
Analysis Date:	08/24/2011 1839	Units:	mg/L	Final Weight/Volume:	10 mL
Prep Date:	N/A				
Leach Date:	N/A				

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Nitrate as N	4.00	4.16	104	85 - 115	

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 360-79061

Method: 300.0
Preparation: N/A

MS Lab Sample ID:	360-35898-1	Analysis Batch:	360-79061	Instrument ID:	Lachat 8500
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	N/A
Dilution:	10	Leach Batch:	N/A	Initial Weight/Volume:	1.0 mL
Analysis Date:	08/24/2011 1927			Final Weight/Volume:	10 mL
Prep Date:	N/A				
Leach Date:	N/A				

MSD Lab Sample ID:	360-35898-1	Analysis Batch:	360-79061	Instrument ID:	Lachat 8500
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	N/A
Dilution:	10	Leach Batch:	N/A	Initial Weight/Volume:	1.0 mL
Analysis Date:	08/24/2011 1943			Final Weight/Volume:	10 mL
Prep Date:	N/A				
Leach Date:	N/A				

	% Rec.						
Analyte	MS	MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
Nitrate as N	93	93	75 - 125	0	20		

Client: Olin Corporation

Job Number: 360-35898-1

Method Blank - Batch: 360-79065

Method: 300.0
Preparation: N/A

Lab Sample ID:	MB 360-79065/4	Analysis Batch:	360-79065	Instrument ID:	Lachat 8500
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	N/A
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.0 mL
Analysis Date:	08/24/2011 1823	Units:	mg/L	Final Weight/Volume:	1.0 mL
Prep Date:	N/A				
Leach Date:	N/A				

Analyte	Result	Qual	RL	RL
Nitrite as N	ND		0.010	0.010

Lab Control Sample - Batch: 360-79065

Method: 300.0
Preparation: N/A

Lab Sample ID:	LCS 360-79065/5	Analysis Batch:	360-79065	Instrument ID:	Lachat 8500
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	N/A
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.0 mL
Analysis Date:	08/24/2011 1839	Units:	mg/L	Final Weight/Volume:	10 mL
Prep Date:	N/A				
Leach Date:	N/A				

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Nitrite as N	4.00	4.24	106	85 - 115	

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 360-79065

Method: 300.0
Preparation: N/A

MS Lab Sample ID:	360-35898-1	Analysis Batch:	360-79065	Instrument ID:	Lachat 8500
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	N/A
Dilution:	10	Leach Batch:	N/A	Initial Weight/Volume:	1.0 mL
Analysis Date:	08/24/2011 1927			Final Weight/Volume:	10 mL
Prep Date:	N/A				
Leach Date:	N/A				

MSD Lab Sample ID:	360-35898-1	Analysis Batch:	360-79065	Instrument ID:	Lachat 8500
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	N/A
Dilution:	10	Leach Batch:	N/A	Initial Weight/Volume:	1.0 mL
Analysis Date:	08/24/2011 1943			Final Weight/Volume:	10 mL
Prep Date:	N/A				
Leach Date:	N/A				

	% Rec.						
Analyte	MS	MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
Nitrite as N	110	111	75 - 125	0	20		

Client: Olin Corporation

Job Number: 360-35898-1

Method Blank - Batch: 360-79183

Method: L107-06-1B
Preparation: Distill/Ammonia

Lab Sample ID:	MB 360-79183/1-A	Analysis Batch:	360-79216	Instrument ID:	No Equipment
Client Matrix:	Water	Prep Batch:	360-79183	Lab File ID:	N/A
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	50 mL
Analysis Date:	08/30/2011 1458	Units:	mg/L	Final Weight/Volume:	50 mL
Prep Date:	08/30/2011 1154				
Leach Date:	N/A				

Analyte	Result	Qual	RL	RL
Ammonia	ND		0.10	0.10

Lab Control Sample - Batch: 360-79183

Method: L107-06-1B
Preparation: Distill/Ammonia

Lab Sample ID:	LCS 360-79183/2-A	Analysis Batch:	360-79216	Instrument ID:	No Equipment
Client Matrix:	Water	Prep Batch:	360-79183	Lab File ID:	N/A
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	50 mL
Analysis Date:	08/30/2011 1459	Units:	mg/L	Final Weight/Volume:	50 mL
Prep Date:	08/30/2011 1154				
Leach Date:	N/A				

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Ammonia	10.0	9.04	90	90 - 110	

Client: Olin Corporation

Job Number: 360-35898-1

Method Blank - Batch: 360-79479

Method: L107-06-1B
Preparation: Distill/Ammonia

Lab Sample ID:	MB 360-79479/1-A	Analysis Batch:	360-79587	Instrument ID:	Lachat
Client Matrix:	Water	Prep Batch:	360-79479	Lab File ID:	N/A
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	50 mL
Analysis Date:	09/06/2011 1509	Units:	mg/L	Final Weight/Volume:	50 mL
Prep Date:	09/02/2011 1415				
Leach Date:	N/A				

Analyte	Result	Qual	RL	RL
Ammonia	ND		0.10	0.10

Lab Control Sample - Batch: 360-79479

Method: L107-06-1B
Preparation: Distill/Ammonia

Lab Sample ID:	LCS 360-79479/2-A	Analysis Batch:	360-79587	Instrument ID:	Lachat
Client Matrix:	Water	Prep Batch:	360-79479	Lab File ID:	N/A
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	50 mL
Analysis Date:	09/06/2011 1510	Units:	mg/L	Final Weight/Volume:	50 mL
Prep Date:	09/02/2011 1415				
Leach Date:	N/A				

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Ammonia	10.0	9.33	93	90 - 110	

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 360-79479

Method: L107-06-1B
Preparation: Distill/Ammonia

MS Lab Sample ID:	360-35898-7	Analysis Batch:	360-79587	Instrument ID:	Lachat
Client Matrix:	Water	Prep Batch:	360-79479	Lab File ID:	N/A
Dilution:	5.0	Leach Batch:	N/A	Initial Weight/Volume:	50 mL
Analysis Date:	09/06/2011 1512			Final Weight/Volume:	50 mL
Prep Date:	09/02/2011 1415				
Leach Date:	N/A				

MSD Lab Sample ID:	360-35898-7	Analysis Batch:	360-79587	Instrument ID:	Lachat
Client Matrix:	Water	Prep Batch:	360-79479	Lab File ID:	N/A
Dilution:	5.0	Leach Batch:	N/A	Initial Weight/Volume:	50 mL
Analysis Date:	09/06/2011 1513			Final Weight/Volume:	50 mL
Prep Date:	09/02/2011 1415				
Leach Date:	N/A				

	% Rec.						
Analyte	MS	MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
Ammonia	145	152	90 - 110	1	20	4	4

Client: Olin Corporation

Job Number: 360-35898-1

Method Blank - Batch: 360-79387

Method: SM 2510B
Preparation: N/A

Lab Sample ID:	MB 360-79387/1	Analysis Batch:	360-79387	Instrument ID:	hand held
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	N/A
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	
Analysis Date:	09/01/2011 1215	Units:	umhos/cm	Final Weight/Volume:	1.0 mL
Prep Date:	N/A				
Leach Date:	N/A				

Analyte	Result	Qual	RL	RL
Specific Conductance	ND		1.0	1.0

Lab Control Sample - Batch: 360-79387

Method: SM 2510B
Preparation: N/A

Lab Sample ID:	LCS 360-79387/2	Analysis Batch:	360-79387	Instrument ID:	hand held
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	N/A
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	
Analysis Date:	09/01/2011 1215	Units:	umhos/cm	Final Weight/Volume:	1.0 mL
Prep Date:	N/A				
Leach Date:	N/A				

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Specific Conductance	1410	1420	100	85 - 115	

Duplicate - Batch: 360-79387

Method: SM 2510B
Preparation: N/A

Lab Sample ID:	360-35898-1	Analysis Batch:	360-79387	Instrument ID:	hand held
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	N/A
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	
Analysis Date:	09/01/2011 1215	Units:	umhos/cm	Final Weight/Volume:	1.0 mL
Prep Date:	N/A				
Leach Date:	N/A				

Analyte	Sample Result/Qual	Result	RPD	Limit	Qual
Specific Conductance	790	777	2	20	

DILUTION LOGS

TestAmerica Westfield

Analytical Dilution Preparation Log

Date: 8.24-11

Analyst Initials	Date	Method	LIMs Sample ID	Rpt'd Dil.	Sample Aliquot 1	Units	Final Volume 1	Units	Serial Dilution				Comments
									Sample Aliquot 2	Units	Final Volume 2	Units	
RLE	8-24-11	300.0	358981	10K	1	mL	10	mL					
			C2										
			C3										
			C4										
			C5										
			C6										
			C7										

entries completed by day [new page each day]

0329

TestAmerica Westfield

Analytical Dilution Preparation Log

Date: 8.24-11

Analyst Initials	Date	Method	LIMs Sample ID	Rpt'd Dil.	Sample Aliquot 1	Units	Final Volume 1	Units	Serial Dilution				Comments
									Sample Aliquot 2	Units	Final Volume 2	Units	
RLE	8-24-11	300.0	358498C1	10K	1	mL	10	mL					
			C2										
			C3										
			C4										
			C5										
			C6										
			C7										

entries completed by day [new page each day]

RLE 8-24-11

0329

TestAmerica Westfield

Analytical Dilution Preparation Log

Date: 8-30-11

Analyst Initials	Date	Method	LIMs Sample ID	Rpt'd Dil.	Sample Aliquot 1	Units	Final Volume 1	Units	Serial Dilution: Sample Aliquot 2	Serial Dilution: Units	Serial Dilution: Final Volume 2	Serial Dilution: Units	Comments
RW	8-30-11	NH3	358981	10X	1	mL	10	mL					
↓	↓	↓	↓ 02	10X	1	↓	↓	↓					
			04	10X	1								
			05	10X	1								
			06	5X	2								

entries completed by day [new page each day]

009e

TestAmerica Westfield

Analytical Dilution Preparation Log

Date: 9-6-11

Analyst Initials	Date	Method	LIMs Sample ID	Rpt'd Dil.	Sample Aliquot 1	Units	Final Volume 1	Units	Serial Dilution: Sample Aliquot 2	Serial Dilution: Units	Serial Dilution: Final Volume 2	Serial Dilution: Units	Comments
RVE	9-6-11	NH3	359620 1	10x	1	mL	10	mL					
			C2	10x	1								
			C3	5x	2								
			C4	5x	2								
			C5	10x	1								
			C6	10x	1								
			C7	5x	2								
			C8	5x	2								
			C9	10x	1								
			C10	10x	1								
RVE	9-6-11	NH3	359807	5x	2	mL	10	mL					

entries completed by day [new page each day]

DIOe

State Accreditation Matrix

Method Name	Description	State where **Primary** Accreditation is Carried			
		New Hampshire (NELAC)	Mass	Conn	North Carolina
821-R-02-012	Toxicity, Acute (48-Hour)(list upon request)	NP			
SM 4500 Cl F	Chlorine, Residual		NP		
SM 9215E	Heterotrophic Plate Count (SimPlate)		P		
SM 9222D	Coliforms, Fecal (Membrane Filter)		P/NP		
SM 9223	Coliforms, Total, and E.Coli (Colilert-P/A)		P		
SM 9224	Coliforms, Total, and E.Coli (Enumeration)		P		
1103.1	E.coli		ambient/ source		
Enterolert	Enterococcus				
200.8 Rev 5.4	Metals (ICP/MS) (list upon request)	NP/P	NP/P		
200.7 Rev 4.4	Metals (ICP)(list upon request)	NP/P	NP/P		
6010B	Metals (ICP)(list upon request)	NP/SW			
245.1	Mercury (CVAA)	NP/P	NP		
7470A	Mercury (CVAA)	NP			
7471A	Mercury (CVAA)	SW			
SM 2340B	Total Hardness (as CaCO3) by calculation	NP/P	NP		
3005A	Preparation, Total Recoverable or Dissolved Metals	NP/P			
3010A	Preparation, Total Metals	NP/P			
3020A	Preparation, Total Metals	NP/P/SW			
3050B	Preparation, Metals	SW			
504.1	EDB, DBCP and 1,2,3-TCP (GC)	P	P		
608	Organochlorine Pest/PCBs (list upon request)	NP	NP		
625	Semivolatile Org Comp (GC/MS)(list upon request)	NP	NP		
3546	Microwave Extraction	SW			
3510C	Liquid-Liquid Extraction (Separatory Funnel)	NP			
3550B	Ultrasonic Extraction	SW			
8081A	Organochlorine Pesticides (GC)(list upon request)	NP/SW			
8082	PCBs by Gas Chromatography(list upon request)	NP/SW			
8270C	Semivolatile Comp.(GC/MS)(list upon request)	NP/SW			
CT ETPH	Conn - Ext. Total petroleum Hydrocarbons (GC)			NP/SW	
MA-EPH	Mass - Extractable Petroleum Hydrocarbons (GC)				NP/SW
524.2	Volatile Org Comp (GC/MS)(list upon request)	P	P		
524.2	Trihalomethane compounds	P	P		
624	Volatile Org Comp (GC/MS)(list upon request)	NP	NP		
5035	Closed System Purge and Trap	SW			
5030B	Purge and Trap	NP			
8260B	Volatile Org Comp. (GC/MS)(list upon request)	NP/SW			
MAVPH	Mass - Volatile Petroleum Hydrocarbons (GC)				NP/SW
180.1	Turbidity, Nephelometric	P	P		
300	Anions, Ion Chromatography	NP/P	NP/P		
410.4	COD	NP	NP		
1010	Ignitability, Pensky-Martens Closed-Cup Method	SW			
10-107-06-2	Nitrogen, Total Kjeldahl	NP	NP		
7196A	Chromium, Hexavalent	NP/SW			
9012A	Cyanide, Total and/or Amenable	NP/SW			
9030B	Sulfide, Distillation (Acid Soluble and Insoluble)	NP			
9045C	pH	SW			
L107041C	Nitrogen, Nitrate	NP	P		
L107-06-1B	Nitrogen Ammonia	NP	NP		
L204001A CN	Cyanide, Total	P	NP/P		
L210-001A	Phenolics, Total Recoverable	NP	NP		
SM 2320B	Alkalinity	NP/P	NP/P		
SM 2510B	Conductivity, Specific Conductance	NP/P	NP/P		
SM 2540C	Solids, Total Dissolved (TDS)	NP/P	NP/P		
SM 2540D	Solids, Total Suspended (TSS)	NP	NP		
SM 3500 CR D	Chromium, Hexavalent	NP			
SM 4500 H+ B	pH	NP/P	NP/P		
SM 4500 NO2 B	Nitrogen, Nitrite	NP	P		
SM 4500 P E	Phosphorus, Orthophosphate	NP/P	NP		
SM 4500 P E	Phosphorus, Total	NP	NP		
SM 4500 S2 D	Sulfide, Total	NP			
SM 5210B	BOD, 5-Day	NP	NP		
SM 5310B	Organic Carbon, Total (TOC)	NP/P	NP		

Not all organic compounds are accreditied under NELAC
For methods with multiple compounds all compounds may not meet NELAC criteria, listing should be obtained from the laboratory
The lab carries additional accreditations with several states. This is the laboratories typcial listing but is subject to change based on the laboratories current certification standing.

Login Sample Receipt Checklist

Client: Olin Corporation

Job Number: 360-35898-1

Login Number: 35898

List Source: TestAmerica Westfield

List Number: 1

Creator: Ard, Vanessa L

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	N/A	
The cooler's custody seal, if present, is intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

TestAmerica Westfield
Westfield Executive Park 53 Southampton Road
Westfield, MA 01085
Phone (413) 572-4000 Fax (413) 572-3707

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information	Sampler: Brian Cuchard/Chris Mastalski	Lab PM: Mason, Becky C	Carrier Tracking No(s):	COC No:
Client Contact: James Cashwell	Phone: 9786586121	E-Mail: becky.mason@testamericainc.com		Page:
Company: Olin Corp				Job #:
Address: 51Eames Street	Due Date Requested:			
City: Wilington	TAT Requested (days):			
State, Zip: MA				
Phone: 9786586121	PO #: REWI0013			
Email:	WO #:			
Project Name: Olin Surface water Quaterly	Project #: 36001816			
Site: Wilmington, MA	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2SO3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - ph 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	LACH_107_06_1_B - Ammonia	6010B - Field filtered Al/Cr/Na	2510B Spec. Cond., 300.0_28DSO4/Cl, 300_48HRNO3/NO2	6010B Total Al/Cr/Na									Total Number of containers	Special Instructions/Note:
			Preservation Code:				S	D	N	D										
OC-SW-ISCO1	8-23-11	10:25	G	Water	Y		X	X	X	X									4	MCP
OC-SW-ISCO2	8-23-11	9:15	G	Water	Y		X	X	X	X									4	
OC-SW-ISCO3	8-23-11	9:00	G	Water	Y		X	X	X	X									4	
OC-SW-PZ-16RRSW	8-23-11	9:25	G	Water	Y		X	X	X	X									4	
OC-SW-PZ-17RRSW	8-23-11	9:40	G	Water	Y		X	X	X	X									4	
OC-SW-PZ-18RSW	8-23-11	10:10	G	Water	Y		X	X	X	X									4	
OC-SW-SD-17	8-23-11	9:50	G	Water	Y		X	X	X	X									4	
OC-DUP				Water	Y		X	X	X	X									4	
				Water																
				Water																
				Water												JP	8/23/11			

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1	Brian Cuchard	8-23-11 1320			8-23-11 1320	
2		8-23-11 1645			8/23/11 1645	
3						

Custody Seals Intact: ☐ Yes ☒ No | Custody Seal No.:

Cooler Temperature(s) °C and Other Remarks: 0.3/1.0/1C

FILE COPY

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Westfield
Westfield Executive Park
53 Southampton Road
Westfield, MA 01085
Tel: (413)572-4000

CHECKED FOR COMPLETENESS OF PARAMETERS ORDERED BY:

9/21/11

TestAmerica Job ID: 360-35962-1
Client Project/Site: Olin Chemical Quarterly Groundwater

For:
Olin Corporation
PO BOX 248
Charleston, Tennessee 37310-0248

Attn: Mr. James Cashwell

Authorized for release by:
09/09/2011 02:00:24 PM
Joe Chimi
Report Production Representative
joe.chimi@testamericainc.com

Designee for

Becky Mason
Project Manager II
becky.mason@testamericainc.com

Table of Contents

Job ID: 360-35962-1

Laboratory: TestAmerica Westfield

Narrative

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT

The samples were received on 08/25/2011; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 0.1 C.

DISSOLVED METALS

Samples OC-GW-202S (360-35962-1), OC-GW-202D (360-35962-2), OC-GW-25 (360-35962-3), OC-GW-78S (360-35962-4), OC-GW-79S (360-35962-5), OC-PZ-16RR (360-35962-6), OC-PZ-17RR (360-35962-7), OC-PZ-18R (360-35962-8), OC-PZ-24 (360-35962-9) and OC-PZ-25 (360-35962-10) were analyzed for dissolved metals in accordance with EPA SW-846 Method 6010B. The samples were analyzed on 09/01/2011.

Sample OC-GW-202D (360-35962-2)[2X] required dilution prior to analysis due to high non-target concentration. The reporting limits have been adjusted accordingly.

At the request of the client, an abbreviated/modified MCP analyte list was reported for this job.

No difficulties were encountered during the dissolved metals analyses.

All quality control parameters were within the acceptance limits.

ANIONS (28 DAY HOLD TIME)

Samples OC-GW-202S (360-35962-1), OC-GW-202D (360-35962-2), OC-GW-25 (360-35962-3), OC-GW-78S (360-35962-4), OC-GW-79S (360-35962-5), OC-PZ-16RR (360-35962-6), OC-PZ-17RR (360-35962-7), OC-PZ-18R (360-35962-8), OC-PZ-24 (360-35962-9) and OC-PZ-25 (360-35962-10) were analyzed for anions (28 day hold time) in accordance with EPA Method 300.0. The samples were analyzed on 08/27/2011 and 08/31/2011.

Samples OC-GW-202S (360-35962-1)[10X], OC-GW-202D (360-35962-2)[10X], OC-GW-202D (360-35962-2)[50X], OC-GW-25 (360-35962-3)[10X], OC-GW-78S (360-35962-4)[10X], OC-GW-79S (360-35962-5)[10X], OC-GW-79S (360-35962-5)[20X], OC-PZ-16RR (360-35962-6)[10X], OC-PZ-17RR (360-35962-7)[10X], OC-PZ-18R (360-35962-8)[10X], OC-PZ-24 (360-35962-9)[10X] and OC-PZ-25 (360-35962-10)[10X] required dilution prior to analysis due to high target concentration. The reporting limits have been adjusted accordingly.

No difficulties were encountered during the anions analyses.

All quality control parameters were within the acceptance limits.

AMMONIA

Samples OC-GW-202S (360-35962-1), OC-GW-202D (360-35962-2), OC-GW-25 (360-35962-3), OC-GW-78S (360-35962-4), OC-GW-79S (360-35962-5), OC-PZ-16RR (360-35962-6), OC-PZ-17RR (360-35962-7), OC-PZ-18R (360-35962-8), OC-PZ-24 (360-35962-9) and OC-PZ-25 (360-35962-10) were analyzed for ammonia in accordance with Lachat 107-06-1B. The samples were prepared on 09/02/2011 and analyzed on 09/06/2011.

Samples OC-GW-202S (360-35962-1)[10X], OC-GW-202D (360-35962-2)[10X], OC-GW-25 (360-35962-3)[5X], OC-GW-78S (360-35962-4)[5X], OC-GW-79S (360-35962-5)[10X], OC-PZ-16RR (360-35962-6)[10X], OC-PZ-17RR (360-35962-7)[5X], OC-PZ-18R (360-35962-8)[5X],

Job ID: 360-35962-1 (Continued)

Laboratory: TestAmerica Westfield (Continued)

OC-PZ-24 (360-35962-9)[10X] and OC-PZ-25 (360-35962-10)[10X] required dilution prior to analysis due to high concentration. The reporting limits have been adjusted accordingly.

No difficulties were encountered during the ammonia analyses.

All quality control parameters were within the acceptance limits.

SPECIFIC CONDUCTIVITY

Samples OC-GW-202S (360-35962-1), OC-GW-202D (360-35962-2), OC-GW-25 (360-35962-3), OC-GW-78S (360-35962-4), OC-GW-79S (360-35962-5), OC-PZ-16RR (360-35962-6), OC-PZ-17RR (360-35962-7), OC-PZ-18R (360-35962-8), OC-PZ-24 (360-35962-9) and OC-PZ-25 (360-35962-10) were analyzed for specific conductivity in accordance with SM20 2510B. The samples were analyzed on 09/01/2011.

Samples OC-GW-202D (360-35962-2)[5X], OC-GW-79S (360-35962-5)[2X] and OC-PZ-16RR (360-35962-6)[2X] required dilution prior to analysis due to high conductance. The reporting limits have been adjusted accordingly.

No difficulties were encountered during the conductivity analyses.

All quality control parameters were within the acceptance limits.

MassDEP Analytical Protocol Certification Form

Laboratory Name: **TestAmerica Westfield** Project #: **360-35962-1**

Project Location: RTN:

This form provides certifications for the following data set: list Laboratory Sample ID Number(s):

360-35962-(1-10)

Matrices: [X] Groundwater/Surface Water [ ] Soil/Sediment [ ] Drinking Water [ ] Air [ ] Other:

CAM Protocols (check all that apply below):

8260 VOC CAM II A [ ]	7470/7471 Hg CAM III B [ ]	Mass DEP VPH CAM IV A [ ]	8081 Pesticides CAM V B [ ]	7196 Hex Cr CAM VI B [ ]	Mass DEP APH CAM IX A [ ]
8270 SVOC CAM II B [ ]	7010 Metals CAM III C [ ]	Mass DEP EPH CAM IV B [ ]	8151 Herbicides CAM V C [ ]	8330 Explosives CAM VIII A [ ]	TO-15 VOC CAM IX B [ ]
6010 Metals CAM III A [X]	6020 Metals CAM III D [ ]	8082 PCB CAM V A [ ]	9014 Total Cyanide/PAC CAM VI A [ ]	332.0 Perchlorate CAM VIII B [ ]	

Affirmative Responses to Questions A through F are required for "Presumptive Certainty" status

A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding time.	[X] Yes [ ] No
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	[X] Yes [ ] No
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	[X] Yes [ ] No
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"?	[X] Yes [ ] No
E	a. VPH, EPH and APH Methods only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications). b. APH and TO-15 Methods only: Was the complete analyte list reported for each method?	[ ] Yes [ ] No [ ] Yes [ ] No
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	[X] Yes [ ] No

Responses to Questions G, H and I below are required for "Presumptive Certainty" status

G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	[X] Yes [ ] No[1]

***Data User Note:* Data that achieve "Presumptive Certainty" status may not necessarily meet the data usability and representativeness requirements described in 310 CMR 40. 1056 (2)(k) and WCS-07-350**

H	Were **all** QC performance standards specified in the CAM protocol(s) achieved?	[X] Yes [ ] No
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s) ?	[ ] Yes [X] No

[1] All negative responses must be addressed in an attached laboratory narrative.

I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, is accurate and complete.

Signature: Christine Lucinda Reynolds Position: Quality Assurance Manager

Printed Name: Christine Reynolds Date: 9/9/11 13:55

This form has been electronically signed and approved

Detection Summary

Client: Olin Corporation
Project/Site: Olin Chemical Quarterly Groundwater

TestAmerica Job ID: 360-35962-1

Client Sample ID: OC-GW-202S — Lab Sample ID: 360-35962-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chromium	4.4	J	5.0	0.65	ug/L	1		6010B	Dissolved

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	380		20	20	mg/L	10		300.0	Total/NA
Chloride	60		10	10	mg/L	10		300.0	Total/NA
Ammonia	62		1.0	1.0	mg/L	10		L107-06-1B	Total/NA
Specific Conductance	1300		1.0	1.0	umhos/cm	1		SM 2510B	Total/NA

Client Sample ID: OC-GW-202D — Lab Sample ID: 360-35962-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Aluminum	12000		200	25	ug/L	2		6010B	Dissolved
Chromium	930		10	1.3	ug/L	2		6010B	Dissolved

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	1900		100	100	mg/L	50		300.0	Total/NA
Chloride	310		10	10	mg/L	10		300.0	Total/NA
Ammonia	190		1.0	1.0	mg/L	10		L107-06-1B	Total/NA
Specific Conductance	4800		5.0	5.0	umhos/cm	5		SM 2510B	Total/NA

Client Sample ID: OC-GW-25 — Lab Sample ID: 360-35962-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chromium	1.8	J	5.0	0.65	ug/L	1		6010B	Dissolved

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	91		2.0	2.0	mg/L	1		300.0	Total/NA
Chloride	100		10	10	mg/L	10		300.0	Total/NA
Ammonia	39		0.50	0.50	mg/L	5		L107-06-1B	Total/NA
Specific Conductance	760		1.0	1.0	umhos/cm	1		SM 2510B	Total/NA

Client Sample ID: OC-GW-78S — Lab Sample ID: 360-35962-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Aluminum	55	J	100	13	ug/L	1		6010B	Dissolved
Chromium	14		5.0	0.65	ug/L	1		6010B	Dissolved

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	430		20	20	mg/L	10		300.0	Total/NA
Chloride	23		1.0	1.0	mg/L	1		300.0	Total/NA
Ammonia	39		0.50	0.50	mg/L	5		L107-06-1B	Total/NA
Specific Conductance	1200		1.0	1.0	umhos/cm	1		SM 2510B	Total/NA

Client Sample ID: OC-GW-79S — Lab Sample ID: 360-35962-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chromium	19		5.0	0.65	ug/L	1		6010B	Dissolved

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	1000		40	40	mg/L	20		300.0	Total/NA
Chloride	190		10	10	mg/L	10		300.0	Total/NA
Ammonia	97		1.0	1.0	mg/L	10		L107-06-1B	Total/NA
Specific Conductance	3000		2.0	2.0	umhos/cm	2		SM 2510B	Total/NA

Client Sample ID: OC-PZ-16RR — Lab Sample ID: 360-35962-6

Client Sample ID: OC-PZ-16RR (Continued) — Lab Sample ID: 360-35962-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chromium	5.4		5.0	0.65	ug/L	1		6010B	Dissolved

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	720		20	20	mg/L	10		300.0	Total/NA
Chloride	220		10	10	mg/L	10		300.0	Total/NA
Ammonia	160		1.0	1.0	mg/L	10		L107-06-1B	Total/NA
Specific Conductance	3000		2.0	2.0	umhos/cm	2		SM 2510B	Total/NA

Client Sample ID: OC-PZ-17RR — Lab Sample ID: 360-35962-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Aluminum	22	J	100	13	ug/L	1		6010B	Dissolved
Chromium	11		5.0	0.65	ug/L	1		6010B	Dissolved

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	440		20	20	mg/L	10		300.0	Total/NA
Chloride	23		1.0	1.0	mg/L	1		300.0	Total/NA
Ammonia	32		0.50	0.50	mg/L	5		L107-06-1B	Total/NA
Specific Conductance	1400		1.0	1.0	umhos/cm	1		SM 2510B	Total/NA

Client Sample ID: OC-PZ-18R — Lab Sample ID: 360-35962-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chromium	12		5.0	0.65	ug/L	1		6010B	Dissolved

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	60		2.0	2.0	mg/L	1		300.0	Total/NA
Chloride	110		10	10	mg/L	10		300.0	Total/NA
Ammonia	33		0.50	0.50	mg/L	5		L107-06-1B	Total/NA
Specific Conductance	810		1.0	1.0	umhos/cm	1		SM 2510B	Total/NA

Client Sample ID: OC-PZ-24 — Lab Sample ID: 360-35962-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Aluminum	15	J	100	13	ug/L	1		6010B	Dissolved
Chromium	21		5.0	0.65	ug/L	1		6010B	Dissolved

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	710		20	20	mg/L	10		300.0	Total/NA
Chloride	23		1.0	1.0	mg/L	1		300.0	Total/NA
Ammonia	61		1.0	1.0	mg/L	10		L107-06-1B	Total/NA
Specific Conductance	2000		1.0	1.0	umhos/cm	1		SM 2510B	Total/NA

Client Sample ID: OC-PZ-25 — Lab Sample ID: 360-35962-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chromium	9.3		5.0	0.65	ug/L	1		6010B	Dissolved

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	420		20	20	mg/L	10		300.0	Total/NA
Chloride	22		1.0	1.0	mg/L	1		300.0	Total/NA
Ammonia	43		1.0	1.0	mg/L	10		L107-06-1B	Total/NA
Specific Conductance	1400		1.0	1.0	umhos/cm	1		SM 2510B	Total/NA

Method Summary

Client: Olin Corporation
Project/Site: Olin Chemical Quarterly Groundwater

TestAmerica Job ID: 360-35962-1

Method	Method Description	Protocol	Laboratory
6010B	Dissolved Metals	SW846	TAL WFD
300.0	Chloride & Sulfate	40CFR136A	TAL WFD
L107-06-1B	Nitrogen Ammonia	LACHAT	TAL WFD
SM 2510B	Conductivity, Specific Conductance	SM	TAL WFD

Protocol References:

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.
LACHAT = LACHAT

SM = "Standard Methods For The Examination Of Water And Wastewater",

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL WFD = TestAmerica Westfield, Westfield Executive Park, 53 Southampton Road, Westfield, MA 01085, TEL (413)572-4000

Sample Summary

Client: Olin Corporation
Project/Site: Olin Chemical Quarterly Groundwater

TestAmerica Job ID: 360-35962-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
360-35962-1	OC-GW-202S	Water	08/24/11 11:10	08/25/11 16:05
360-35962-2	OC-GW-202D	Water	08/24/11 10:35	08/25/11 16:05
360-35962-3	OC-GW-25	Water	08/25/11 10:55	08/25/11 16:05
360-35962-4	OC-GW-78S	Water	08/24/11 09:00	08/25/11 16:05
360-35962-5	OC-GW-79S	Water	08/24/11 08:15	08/25/11 16:05
360-35962-6	OC-PZ-16RR	Water	08/24/11 07:15	08/25/11 16:05
360-35962-7	OC-PZ-17RR	Water	08/24/11 09:50	08/25/11 16:05
360-35962-8	OC-PZ-18R	Water	08/25/11 10:05	08/25/11 16:05
360-35962-9	OC-PZ-24	Water	08/25/11 08:25	08/25/11 16:05
360-35962-10	OC-PZ-25	Water	08/25/11 09:05	08/25/11 16:05

Method: 6010B - Dissolved Metals - Dissolved

Client Sample ID: OC-GW-202S
Date Collected: 08/24/11 11:10
Date Received: 08/25/11 16:05

Lab Sample ID: 360-35962-1
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		100	13	ug/L			09/01/11 16:06	1
Chromium	**4.4**	**J**	5.0	0.65	ug/L			09/01/11 16:06	1

Client Sample ID: OC-GW-202D
Date Collected: 08/24/11 10:35
Date Received: 08/25/11 16:05

Lab Sample ID: 360-35962-2
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**12000**		200	25	ug/L			09/01/11 17:53	2
Chromium	**930**		10	1.3	ug/L			09/01/11 17:53	2

Client Sample ID: OC-GW-25
Date Collected: 08/25/11 10:55
Date Received: 08/25/11 16:05

Lab Sample ID: 360-35962-3
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		100	13	ug/L			09/01/11 16:21	1
Chromium	**1.8**	**J**	5.0	0.65	ug/L			09/01/11 16:21	1

Client Sample ID: OC-GW-78S
Date Collected: 08/24/11 09:00
Date Received: 08/25/11 16:05

Lab Sample ID: 360-35962-4
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**55**	**J**	100	13	ug/L			09/01/11 16:23	1
Chromium	**14**		5.0	0.65	ug/L			09/01/11 16:23	1

Client Sample ID: OC-GW-79S
Date Collected: 08/24/11 08:15
Date Received: 08/25/11 16:05

Lab Sample ID: 360-35962-5
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		100	13	ug/L			09/01/11 16:26	1
Chromium	**19**		5.0	0.65	ug/L			09/01/11 16:26	1

Client Sample ID: OC-PZ-16RR
Date Collected: 08/24/11 07:15
Date Received: 08/25/11 16:05

Lab Sample ID: 360-35962-6
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		100	13	ug/L			09/01/11 16:29	1
Chromium	**5.4**		5.0	0.65	ug/L			09/01/11 16:29	1

Client Sample ID: OC-PZ-17RR
Date Collected: 08/24/11 09:50
Date Received: 08/25/11 16:05

Lab Sample ID: 360-35962-7
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**22**	**J**	100	13	ug/L			09/01/11 16:32	1

Method: 6010B - Dissolved Metals - Dissolved (Continued)

Client Sample ID: OC-PZ-17RR
Date Collected: 08/24/11 09:50
Date Received: 08/25/11 16:05

Lab Sample ID: 360-35962-7
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	**11**		5.0	0.65	ug/L			09/01/11 16:32	1

Client Sample ID: OC-PZ-18R
Date Collected: 08/25/11 10:05
Date Received: 08/25/11 16:05

Lab Sample ID: 360-35962-8
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		100	13	ug/L			09/01/11 17:44	1
Chromium	**12**		5.0	0.65	ug/L			09/01/11 17:44	1

Client Sample ID: OC-PZ-24
Date Collected: 08/25/11 08:25
Date Received: 08/25/11 16:05

Lab Sample ID: 360-35962-9
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	**15**	**J**	100	13	ug/L			09/01/11 17:47	1
Chromium	**21**		5.0	0.65	ug/L			09/01/11 17:47	1

Client Sample ID: OC-PZ-25
Date Collected: 08/25/11 09:05
Date Received: 08/25/11 16:05

Lab Sample ID: 360-35962-10
Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		100	13	ug/L			09/01/11 17:50	1
Chromium	**9.3**		5.0	0.65	ug/L			09/01/11 17:50	1

General Chemistry

Client Sample ID: OC-GW-202S
Date Collected: 08/24/11 11:10
Date Received: 08/25/11 16:05

Lab Sample ID: 360-35962-1
Matrix: Water

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	380		20	20	mg/L			08/27/11 00:47	10
Chloride	60		10	10	mg/L			08/27/11 00:47	10
Ammonia	62		1.0	1.0	mg/L		09/02/11 14:15	09/06/11 15:55	10
Specific Conductance	1300		1.0	1.0	umhos/cm			09/01/11 12:15	1

Client Sample ID: OC-GW-202D
Date Collected: 08/24/11 10:35
Date Received: 08/25/11 16:05

Lab Sample ID: 360-35962-2
Matrix: Water

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	1900		100	100	mg/L			08/31/11 21:38	50
Chloride	310		10	10	mg/L			08/27/11 02:24	10
Ammonia	190		1.0	1.0	mg/L		09/02/11 14:15	09/06/11 15:56	10
Specific Conductance	4800		5.0	5.0	umhos/cm			09/01/11 12:15	5

Client Sample ID: OC-GW-25
Date Collected: 08/25/11 10:55
Date Received: 08/25/11 16:05

Lab Sample ID: 360-35962-3
Matrix: Water

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	91		2.0	2.0	mg/L			08/27/11 03:12	1
Chloride	100		10	10	mg/L			08/27/11 03:28	10
Ammonia	39		0.50	0.50	mg/L		09/02/11 14:15	09/06/11 15:57	5
Specific Conductance	760		1.0	1.0	umhos/cm			09/01/11 12:15	1

Client Sample ID: OC-GW-78S
Date Collected: 08/24/11 09:00
Date Received: 08/25/11 16:05

Lab Sample ID: 360-35962-4
Matrix: Water

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	430		20	20	mg/L			08/27/11 04:00	10
Chloride	23		1.0	1.0	mg/L			08/27/11 03:44	1
Ammonia	39		0.50	0.50	mg/L		09/02/11 14:15	09/06/11 15:58	5
Specific Conductance	1200		1.0	1.0	umhos/cm			09/01/11 12:15	1

Client Sample ID: OC-GW-79S
Date Collected: 08/24/11 08:15
Date Received: 08/25/11 16:05

Lab Sample ID: 360-35962-5
Matrix: Water

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	1000		40	40	mg/L			08/31/11 21:54	20
Chloride	190		10	10	mg/L			08/27/11 04:33	10
Ammonia	97		1.0	1.0	mg/L		09/02/11 14:15	09/06/11 15:59	10
Specific Conductance	3000		2.0	2.0	umhos/cm			09/01/11 12:15	2

General Chemistry

Client Sample ID: OC-PZ-16RR
Date Collected: 08/24/11 07:15
Date Received: 08/25/11 16:05

Lab Sample ID: 360-35962-6
Matrix: Water

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	720		20	20	mg/L			08/27/11 05:37	10
Chloride	220		10	10	mg/L			08/27/11 05:37	10
Ammonia	160		1.0	1.0	mg/L		09/02/11 14:15	09/06/11 16:00	10
Specific Conductance	3000		2.0	2.0	umhos/cm			09/01/11 12:15	2

Client Sample ID: OC-PZ-17RR
Date Collected: 08/24/11 09:50
Date Received: 08/25/11 16:05

Lab Sample ID: 360-35962-7
Matrix: Water

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	440		20	20	mg/L			08/27/11 06:09	10
Chloride	23		1.0	1.0	mg/L			08/27/11 05:53	1
Ammonia	32		0.50	0.50	mg/L		09/02/11 14:15	09/06/11 16:01	5
Specific Conductance	1400		1.0	1.0	umhos/cm			09/01/11 12:15	1

Client Sample ID: OC-PZ-18R
Date Collected: 08/25/11 10:05
Date Received: 08/25/11 16:05

Lab Sample ID: 360-35962-8
Matrix: Water

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	60		2.0	2.0	mg/L			08/27/11 06:25	1
Chloride	110		10	10	mg/L			08/27/11 06:42	10
Ammonia	33		0.50	0.50	mg/L		09/02/11 14:15	09/06/11 16:02	5
Specific Conductance	810		1.0	1.0	umhos/cm			09/01/11 12:15	1

Client Sample ID: OC-PZ-24
Date Collected: 08/25/11 08:25
Date Received: 08/25/11 16:05

Lab Sample ID: 360-35962-9
Matrix: Water

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	710		20	20	mg/L			08/27/11 07:14	10
Chloride	23		1.0	1.0	mg/L			08/27/11 06:58	1
Ammonia	61		1.0	1.0	mg/L		09/02/11 14:15	09/06/11 16:03	10
Specific Conductance	2000		1.0	1.0	umhos/cm			09/01/11 12:15	1

Client Sample ID: OC-PZ-25
Date Collected: 08/25/11 09:05
Date Received: 08/25/11 16:05

Lab Sample ID: 360-35962-10
Matrix: Water

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	420		20	20	mg/L			08/27/11 07:46	10
Chloride	22		1.0	1.0	mg/L			08/27/11 07:30	1
Ammonia	43		1.0	1.0	mg/L		09/02/11 14:15	09/06/11 16:04	10
Specific Conductance	1400		1.0	1.0	umhos/cm			09/01/11 12:15	1

Definitions/Glossary

Client: Olin Corporation
Project/Site: Olin Chemical Quarterly Groundwater

TestAmerica Job ID: 360-35962-1

Qualifiers

Metals

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
☼	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
DL, RA, RE, IN	Indicates a Dilution, Reanalysis, Re-extraction, or additional Initial metals/anion analysis of the sample
EDL	Estimated Detection Limit (Dioxin)
EPA	United States Environmental Protection Agency
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
ND	Not detected at the reporting limit (or method detection limit if shown)
PQL	Practical Quantitation Limit
RL	Reporting Limit
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Metals

Analysis Batch: 79423

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
360-35962-1	OC-GW-202S	Dissolved	Water	6010B	
360-35962-1 DU	OC-GW-202S	Dissolved	Water	6010B	
360-35962-1 MS	OC-GW-202S	Dissolved	Water	6010B	
360-35962-2	OC-GW-202D	Dissolved	Water	6010B	
360-35962-3	OC-GW-25	Dissolved	Water	6010B	
360-35962-4	OC-GW-78S	Dissolved	Water	6010B	
360-35962-5	OC-GW-79S	Dissolved	Water	6010B	
360-35962-6	OC-PZ-16RR	Dissolved	Water	6010B	
360-35962-7	OC-PZ-17RR	Dissolved	Water	6010B	
360-35962-8	OC-PZ-18R	Dissolved	Water	6010B	
360-35962-9	OC-PZ-24	Dissolved	Water	6010B	
360-35962-10	OC-PZ-25	Dissolved	Water	6010B	
LCS 360-79423/1	Lab Control Sample	Total/NA	Water	6010B	
LCSD 360-79423/13	Lab Control Sample Dup	Total/NA	Water	6010B	
MB 360-79423/2	Method Blank	Total/NA	Water	6010B	

General Chemistry

Analysis Batch: 79282

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
360-35962-1	OC-GW-202S	Total/NA	Water	300.0	
LCS 360-79282/4	Lab Control Sample	Total/NA	Water	300.0	
MB 360-79282/3	Method Blank	Total/NA	Water	300.0	

Analysis Batch: 79283

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
360-35962-2	OC-GW-202D	Total/NA	Water	300.0	
360-35962-3	OC-GW-25	Total/NA	Water	300.0	
360-35962-3	OC-GW-25	Total/NA	Water	300.0	
360-35962-4	OC-GW-78S	Total/NA	Water	300.0	
360-35962-4	OC-GW-78S	Total/NA	Water	300.0	
360-35962-5	OC-GW-79S	Total/NA	Water	300.0	
360-35962-6	OC-PZ-16RR	Total/NA	Water	300.0	
360-35962-7	OC-PZ-17RR	Total/NA	Water	300.0	
360-35962-7	OC-PZ-17RR	Total/NA	Water	300.0	
360-35962-8	OC-PZ-18R	Total/NA	Water	300.0	
360-35962-8	OC-PZ-18R	Total/NA	Water	300.0	
360-35962-9	OC-PZ-24	Total/NA	Water	300.0	
360-35962-9	OC-PZ-24	Total/NA	Water	300.0	
360-35962-10	OC-PZ-25	Total/NA	Water	300.0	
360-35962-10	OC-PZ-25	Total/NA	Water	300.0	
LCS 360-79283/6	Lab Control Sample	Total/NA	Water	300.0	
MB 360-79283/5	Method Blank	Total/NA	Water	300.0	

Analysis Batch: 79387

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
360-35962-1	OC-GW-202S	Total/NA	Water	SM 2510B	
360-35962-2	OC-GW-202D	Total/NA	Water	SM 2510B	
360-35962-3	OC-GW-25	Total/NA	Water	SM 2510B	
360-35962-3 DU	OC-GW-25	Total/NA	Water	SM 2510B	
360-35962-4	OC-GW-78S	Total/NA	Water	SM 2510B	
360-35962-5	OC-GW-79S	Total/NA	Water	SM 2510B	

General Chemistry (Continued)

Analysis Batch: 79387 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
360-35962-6	OC-PZ-16RR	Total/NA	Water	SM 2510B	
360-35962-7	OC-PZ-17RR	Total/NA	Water	SM 2510B	
360-35962-8	OC-PZ-18R	Total/NA	Water	SM 2510B	
360-35962-9	OC-PZ-24	Total/NA	Water	SM 2510B	
360-35962-10	OC-PZ-25	Total/NA	Water	SM 2510B	
LCS 360-79387/2	Lab Control Sample	Total/NA	Water	SM 2510B	
MB 360-79387/1	Method Blank	Total/NA	Water	SM 2510B	

Analysis Batch: 79449

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
360-35962-2	OC-GW-202D	Total/NA	Water	300.0	
360-35962-5	OC-GW-79S	Total/NA	Water	300.0	
LCS 360-79449/4	Lab Control Sample	Total/NA	Water	300.0	
MB 360-79449/3	Method Blank	Total/NA	Water	300.0	

Prep Batch: 79479

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
360-35962-1	OC-GW-202S	Total/NA	Water	Distill/Ammonia	
360-35962-2	OC-GW-202D	Total/NA	Water	Distill/Ammonia	
360-35962-3	OC-GW-25	Total/NA	Water	Distill/Ammonia	
360-35962-4	OC-GW-78S	Total/NA	Water	Distill/Ammonia	
360-35962-5	OC-GW-79S	Total/NA	Water	Distill/Ammonia	
360-35962-6	OC-PZ-16RR	Total/NA	Water	Distill/Ammonia	
360-35962-7	OC-PZ-17RR	Total/NA	Water	Distill/Ammonia	
360-35962-8	OC-PZ-18R	Total/NA	Water	Distill/Ammonia	
360-35962-9	OC-PZ-24	Total/NA	Water	Distill/Ammonia	
360-35962-10	OC-PZ-25	Total/NA	Water	Distill/Ammonia	
LCS 360-79479/2-A	Lab Control Sample	Total/NA	Water	Distill/Ammonia	
MB 360-79479/1-A	Method Blank	Total/NA	Water	Distill/Ammonia	

Analysis Batch: 79587

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
360-35962-1	OC-GW-202S	Total/NA	Water	L107-06-1B	79479
360-35962-2	OC-GW-202D	Total/NA	Water	L107-06-1B	79479
360-35962-3	OC-GW-25	Total/NA	Water	L107-06-1B	79479
360-35962-4	OC-GW-78S	Total/NA	Water	L107-06-1B	79479
360-35962-5	OC-GW-79S	Total/NA	Water	L107-06-1B	79479
360-35962-6	OC-PZ-16RR	Total/NA	Water	L107-06-1B	79479
360-35962-7	OC-PZ-17RR	Total/NA	Water	L107-06-1B	79479
360-35962-8	OC-PZ-18R	Total/NA	Water	L107-06-1B	79479
360-35962-9	OC-PZ-24	Total/NA	Water	L107-06-1B	79479
360-35962-10	OC-PZ-25	Total/NA	Water	L107-06-1B	79479
LCS 360-79479/2-A	Lab Control Sample	Total/NA	Water	L107-06-1B	79479
MB 360-79479/1-A	Method Blank	Total/NA	Water	L107-06-1B	79479

Method: 6010B - Dissolved Metals

Lab Sample ID: MB 360-79423/2
Matrix: Water
Analysis Batch: 79423

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	ND		100	13	ug/L			09/01/11 16:03	1
Chromium	ND		5.0	0.65	ug/L			09/01/11 16:03	1

Lab Sample ID: LCS 360-79423/1
Matrix: Water
Analysis Batch: 79423

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	% Rec	% Rec. Limits
Aluminum	5000	5290		ug/L		106	80 - 120
Chromium	1000	1020		ug/L		102	80 - 120

Lab Sample ID: LCSD 360-79423/13
Matrix: Water
Analysis Batch: 79423

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	% Rec	% Rec. Limits	RPD	RPD Limit
Aluminum	5000	5210		ug/L		104	80 - 120	2	20
Chromium	1000	1000		ug/L		100	80 - 120	1	20

Lab Sample ID: 360-35962-1 MS
Matrix: Water
Analysis Batch: 79423

Client Sample ID: OC-GW-202S
Prep Type: Dissolved

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	% Rec	% Rec. Limits
Aluminum	ND		5000	5020		ug/L		100	75 - 125
Chromium	4.4	J	1000	983		ug/L		98	75 - 125

Lab Sample ID: 360-35962-1 DU
Matrix: Water
Analysis Batch: 79423

Client Sample ID: OC-GW-202S
Prep Type: Dissolved

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Aluminum	ND		ND		ug/L		NC	20
Chromium	4.4	J	4.52	J	ug/L		2	20

Method: 300.0 - Chloride & Sulfate

Lab Sample ID: MB 360-79282/3
Matrix: Water
Analysis Batch: 79282

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	ND		2.0	2.0	mg/L			08/26/11 18:37	1
Chloride	ND		1.0	1.0	mg/L			08/26/11 18:37	1

Lab Sample ID: LCS 360-79282/4
Matrix: Water
Analysis Batch: 79282

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	% Rec	% Rec. Limits
Sulfate	80.0	84.7		mg/L		106	85 - 115

Method: 300.0 - Chloride & Sulfate (Continued)

Lab Sample ID: LCS 360-79282/4
Matrix: Water
Analysis Batch: 79282

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	% Rec	% Rec. Limits
Chloride	40.0	42.4		mg/L		106	85 - 115

Lab Sample ID: MB 360-79283/5
Matrix: Water
Analysis Batch: 79283

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	ND		2.0	2.0	mg/L			08/27/11 01:36	1
Chloride	ND		1.0	1.0	mg/L			08/27/11 01:36	1

Lab Sample ID: LCS 360-79283/6
Matrix: Water
Analysis Batch: 79283

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	% Rec	% Rec. Limits
Sulfate	80.0	85.3		mg/L		107	85 - 115
Chloride	40.0	42.7		mg/L		107	85 - 115

Lab Sample ID: MB 360-79449/3
Matrix: Water
Analysis Batch: 79449

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	ND		2.0	2.0	mg/L			08/31/11 17:52	1
Chloride	ND		1.0	1.0	mg/L			08/31/11 17:52	1

Lab Sample ID: LCS 360-79449/4
Matrix: Water
Analysis Batch: 79449

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	% Rec	% Rec. Limits
Sulfate	80.0	82.7		mg/L		103	85 - 115
Chloride	40.0	40.8		mg/L		102	85 - 115

Method: L107-06-1B - Nitrogen Ammonia

Lab Sample ID: MB 360-79479/1-A
Matrix: Water
Analysis Batch: 79587

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 79479

Analyte	MB Result	MB Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia	ND		0.10	0.10	mg/L		09/02/11 14:15	09/06/11 15:09	1

Lab Sample ID: LCS 360-79479/2-A
Matrix: Water
Analysis Batch: 79587

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 79479

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	% Rec	% Rec. Limits
Ammonia	10.0	9.33		mg/L		93	90 - 110

Method: SM 2510B - Conductivity, Specific Conductance

Lab Sample ID: MB 360-79387/1
Matrix: Water
Analysis Batch: 79387

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Specific Conductance	ND		1.0	1.0	umhos/cm			09/01/11 12:15	1

Lab Sample ID: LCS 360-79387/2
Matrix: Water
Analysis Batch: 79387

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	% Rec	% Rec. Limits		
Specific Conductance			1410	1420		umhos/cm		100	85 - 115		

Lab Sample ID: 360-35962-3 DU
Matrix: Water
Analysis Batch: 79387

Client Sample ID: OC-GW-25
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Specific Conductance	760			759		umhos/cm				0.4	20

Lab Chronicle

Client: Olin Corporation
Project/Site: Olin Chemical Quarterly Groundwater

TestAmerica Job ID: 360-35962-1

Client Sample ID: OC-GW-202S

Lab Sample ID: 360-35962-1

Date Collected: 08/24/11 11:10
Matrix: Water
Date Received: 08/25/11 16:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared Or Analyzed	Analyst	Lab
Dissolved	Analysis	6010B		1	79423	09/01/11 16:06	TJS	TAL WFD
Total/NA	Analysis	300.0		10	79282	08/27/11 00:47	RWE	TAL WFD
Total/NA	Analysis	SM 2510B		1	79387	09/01/11 12:15	AMS	TAL WFD
Total/NA	Prep	Distill/Ammonia			79479	09/02/11 14:15	RWE	TAL WFD
Total/NA	Analysis	L107-06-1B		10	79587	09/06/11 15:55	RWE	TAL WFD

Client Sample ID: OC-GW-202D

Lab Sample ID: 360-35962-2

Date Collected: 08/24/11 10:35
Matrix: Water
Date Received: 08/25/11 16:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared Or Analyzed	Analyst	Lab
Dissolved	Analysis	6010B		2	79423	09/01/11 17:53	TJS	TAL WFD
Total/NA	Analysis	300.0		10	79283	08/27/11 02:24	RWE	TAL WFD
Total/NA	Analysis	SM 2510B		5	79387	09/01/11 12:15	AMS	TAL WFD
Total/NA	Analysis	300.0		50	79449	08/31/11 21:38	RWE	TAL WFD
Total/NA	Prep	Distill/Ammonia			79479	09/02/11 14:15	RWE	TAL WFD
Total/NA	Analysis	L107-06-1B		10	79587	09/06/11 15:56	RWE	TAL WFD

Client Sample ID: OC-GW-25

Lab Sample ID: 360-35962-3

Date Collected: 08/25/11 10:55
Matrix: Water
Date Received: 08/25/11 16:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared Or Analyzed	Analyst	Lab
Dissolved	Analysis	6010B		1	79423	09/01/11 16:21	TJS	TAL WFD
Total/NA	Analysis	300.0		1	79283	08/27/11 03:12	RWE	TAL WFD
Total/NA	Analysis	300.0		10	79283	08/27/11 03:28	RWE	TAL WFD
Total/NA	Analysis	SM 2510B		1	79387	09/01/11 12:15	AMS	TAL WFD
Total/NA	Prep	Distill/Ammonia			79479	09/02/11 14:15	RWE	TAL WFD
Total/NA	Analysis	L107-06-1B		5	79587	09/06/11 15:57	RWE	TAL WFD

Client Sample ID: OC-GW-78S

Lab Sample ID: 360-35962-4

Date Collected: 08/24/11 09:00
Matrix: Water
Date Received: 08/25/11 16:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared Or Analyzed	Analyst	Lab
Dissolved	Analysis	6010B		1	79423	09/01/11 16:23	TJS	TAL WFD
Total/NA	Analysis	300.0		1	79283	08/27/11 03:44	RWE	TAL WFD
Total/NA	Analysis	300.0		10	79283	08/27/11 04:00	RWE	TAL WFD
Total/NA	Analysis	SM 2510B		1	79387	09/01/11 12:15	AMS	TAL WFD
Total/NA	Prep	Distill/Ammonia			79479	09/02/11 14:15	RWE	TAL WFD
Total/NA	Analysis	L107-06-1B		5	79587	09/06/11 15:58	RWE	TAL WFD

Client Sample ID: OC-GW-79S

Lab Sample ID: 360-35962-5

Date Collected: 08/24/11 08:15

Matrix: Water

Date Received: 08/25/11 16:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared Or Analyzed	Analyst	Lab
Dissolved	Analysis	6010B		1	79423	09/01/11 16:26	TJS	TAL WFD
Total/NA	Analysis	300.0		10	79283	08/27/11 04:33	RWE	TAL WFD
Total/NA	Analysis	SM 2510B		2	79387	09/01/11 12:15	AMS	TAL WFD
Total/NA	Analysis	300.0		20	79449	08/31/11 21:54	RWE	TAL WFD
Total/NA	Prep	Distill/Ammonia			79479	09/02/11 14:15	RWE	TAL WFD
Total/NA	Analysis	L107-06-1B		10	79587	09/06/11 15:59	RWE	TAL WFD

Client Sample ID: OC-PZ-16RR

Lab Sample ID: 360-35962-6

Date Collected: 08/24/11 07:15

Matrix: Water

Date Received: 08/25/11 16:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared Or Analyzed	Analyst	Lab
Dissolved	Analysis	6010B		1	79423	09/01/11 16:29	TJS	TAL WFD
Total/NA	Analysis	300.0		10	79283	08/27/11 05:37	RWE	TAL WFD
Total/NA	Analysis	SM 2510B		2	79387	09/01/11 12:15	AMS	TAL WFD
Total/NA	Prep	Distill/Ammonia			79479	09/02/11 14:15	RWE	TAL WFD
Total/NA	Analysis	L107-06-1B		10	79587	09/06/11 16:00	RWE	TAL WFD

Client Sample ID: OC-PZ-17RR

Lab Sample ID: 360-35962-7

Date Collected: 08/24/11 09:50

Matrix: Water

Date Received: 08/25/11 16:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared Or Analyzed	Analyst	Lab
Dissolved	Analysis	6010B		1	79423	09/01/11 16:32	TJS	TAL WFD
Total/NA	Analysis	300.0		1	79283	08/27/11 05:53	RWE	TAL WFD
Total/NA	Analysis	300.0		10	79283	08/27/11 06:09	RWE	TAL WFD
Total/NA	Analysis	SM 2510B		1	79387	09/01/11 12:15	AMS	TAL WFD
Total/NA	Prep	Distill/Ammonia			79479	09/02/11 14:15	RWE	TAL WFD
Total/NA	Analysis	L107-06-1B		5	79587	09/06/11 16:01	RWE	TAL WFD

Client Sample ID: OC-PZ-18R

Lab Sample ID: 360-35962-8

Date Collected: 08/25/11 10:05

Matrix: Water

Date Received: 08/25/11 16:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared Or Analyzed	Analyst	Lab
Dissolved	Analysis	6010B		1	79423	09/01/11 17:44	TJS	TAL WFD
Total/NA	Analysis	300.0		1	79283	08/27/11 06:25	RWE	TAL WFD
Total/NA	Analysis	300.0		10	79283	08/27/11 06:42	RWE	TAL WFD
Total/NA	Analysis	SM 2510B		1	79387	09/01/11 12:15	AMS	TAL WFD
Total/NA	Prep	Distill/Ammonia			79479	09/02/11 14:15	RWE	TAL WFD
Total/NA	Analysis	L107-06-1B		5	79587	09/06/11 16:02	RWE	TAL WFD

Lab Chronicle

Client: Olin Corporation
Project/Site: Olin Chemical Quarterly Groundwater

TestAmerica Job ID: 360-35962-1

Client Sample ID: OC-PZ-24

Lab Sample ID: 360-35962-9

Date Collected: 08/25/11 08:25

Matrix: Water

Date Received: 08/25/11 16:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared Or Analyzed	Analyst	Lab
Dissolved	Analysis	6010B		1	79423	09/01/11 17:47	TJS	TAL WFD
Total/NA	Analysis	300.0		1	79283	08/27/11 06:58	RWE	TAL WFD
Total/NA	Analysis	300.0		10	79283	08/27/11 07:14	RWE	TAL WFD
Total/NA	Analysis	SM 2510B		1	79387	09/01/11 12:15	AMS	TAL WFD
Total/NA	Prep	Distill/Ammonia			79479	09/02/11 14:15	RWE	TAL WFD
Total/NA	Analysis	L107-06-1B		10	79587	09/06/11 16:03	RWE	TAL WFD

Client Sample ID: OC-PZ-25

Lab Sample ID: 360-35962-10

Date Collected: 08/25/11 09:05

Matrix: Water

Date Received: 08/25/11 16:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared Or Analyzed	Analyst	Lab
Dissolved	Analysis	6010B		1	79423	09/01/11 17:50	TJS	TAL WFD
Total/NA	Analysis	300.0		1	79283	08/27/11 07:30	RWE	TAL WFD
Total/NA	Analysis	300.0		10	79283	08/27/11 07:46	RWE	TAL WFD
Total/NA	Analysis	SM 2510B		1	79387	09/01/11 12:15	AMS	TAL WFD
Total/NA	Prep	Distill/Ammonia			79479	09/02/11 14:15	RWE	TAL WFD
Total/NA	Analysis	L107-06-1B		10	79587	09/06/11 16:04	RWE	TAL WFD

Laboratory References:

TAL WFD = TestAmerica Westfield, Westfield Executive Park, 53 Southampton Road, Westfield, MA 01085, TEL (413)572-4000

Certification Summary

Client: Olin Corporation
Project/Site: Olin Chemical Quarterly Groundwater

TestAmerica Job ID: 360-35962-1

Laboratory	Authority	Program	EPA Region	Certification ID
TestAmerica Westfield	Connecticut	State Program	1	PH-0494
TestAmerica Westfield	Maine	State Program	1	MA00014
TestAmerica Westfield	Massachusetts	State Program	1	M-MA014
TestAmerica Westfield	New Hampshire	NELAC	1	2539
TestAmerica Westfield	New York	NELAC	2	10843
TestAmerica Westfield	North Carolina	North Carolina DENR	4	647
TestAmerica Westfield	Rhode Island	State Program	1	LAO00057
TestAmerica Westfield	Vermont	State Program	1	VT-10843

Accreditation may not be offered or required for all methods and analytes reported in this package. Please contact your project manager for the laboratory's current list of certified methods and analytes.

State Accreditation Matrix

Method Name	Description	State where **Primary** Accreditation is Carried			
		New Hampshire (NELAC)	Mass	Conn	North Carolina
821-R-02-012	Toxicity, Acute (48-Hour)(list upon request)	NP			
SM 4500 Cl F	Chlorine, Residual		NP		
SM 9215E	Heterotrophic Plate Count (SimPlate)		P		
SM 9222D	Coliforms, Fecal (Membrane Filter)		P/NP		
SM 9223	Coliforms, Total, and E.Coli (Colilert-P/A)		P		
SM 9224	Coliforms, Total, and E.Coli (Enumeration)		P		
1103.1	E.coli		ambient/ source		
Enterolert	Enterococcus				
200.8 Rev 5.4	Metals (ICP/MS) (list upon request)	NP/P	NP/P		
200.7 Rev 4.4	Metals (ICP)(list upon request)	NP/P	NP/P		
6010B	Metals (ICP)(list upon request)	NP/SW			
245.1	Mercury (CVAA)	NP/P	NP		
7470A	Mercury (CVAA)	NP			
7471A	Mercury (CVAA)	SW			
SM 2340B	Total Hardness (as CaCO3) by calculation	NP/P	NP		
3005A	Preparation, Total Recoverable or Dissolved Metals	NP/P			
3010A	Preparation, Total Metals	NP/P			
3020A	Preparation, Total Metals	NP/P/SW			
3050B	Preparation, Metals	SW			
504.1	EDB, DBCP and 1,2,3-TCP (GC)	P	P		
608	Organochlorine Pest/PCBs (list upon request)	NP	NP		
625	Semivolatile Org Comp (GC/MS)(list upon request)	NP	NP		
3546	Microwave Extraction	SW			
3510C	Liquid-Liquid Extraction (Separatory Funnel)	NP			
3550B	Ultrasonic Extraction	SW			
8081A	Organochlorine Pesticides (GC)(list upon request)	NP/SW			
8082	PCBs by Gas Chromatography(list upon request)	NP/SW			
8270C	Semivolatile Comp.(GC/MS)(list upon request)	NP/SW			
CT ETPH	Conn - Ext. Total petroleum Hydrocarbons (GC)			NP/SW	
MA-EPH	Mass - Extractable Petroleum Hydrocarbons (GC)				NP/SW
524.2	Volatile Org Comp (GC/MS)(list upon request)	P	P		
524.2	Trihalomethane compounds	P	P		
624	Volatile Org Comp (GC/MS)(list upon request)	NP	NP		
5035	Closed System Purge and Trap	SW			
5030B	Purge and Trap	NP			
8260B	Volatile Org Comp. (GC/MS)(list upon request)	NP/SW			
MAVPH	Mass - Volatile Petroleum Hydrocarbons (GC)				NP/SW
180.1	Turbidity, Nephelometric	P	P		
300	Anions, Ion Chromatography	NP/P	NP/P		
410.4	COD	NP	NP		
1010	Ignitability, Pensky-Martens Closed-Cup Method	SW			
10-107-06-2	Nitrogen, Total Kjeldahl	NP	NP		
7196A	Chromium, Hexavalent	NP/SW			
9012A	Cyanide, Total and/or Amenable	NP/SW			
9030B	Sulfide, Distillation (Acid Soluble and Insoluble)	NP			
9045C	pH	SW			
L107041C	Nitrogen, Nitrate	NP	P		
L107-06-1B	Nitrogen Ammonia	NP	NP		
L204001A CN	Cyanide, Total	P	NP/P		
L210-001A	Phenolics, Total Recoverable	NP	NP		
SM 2320B	Alkalinity	NP/P	NP/P		
SM 2510B	Conductivity, Specific Conductance	NP/P	NP/P		
SM 2540C	Solids, Total Dissolved (TDS)	NP/P	NP/P		
SM 2540D	Solids, Total Suspended (TSS)	NP	NP		
SM 3500 CR D	Chromium, Hexavalent	NP			
SM 4500 H+ B	pH	NP/P	NP/P		
SM 4500 NO2 B	Nitrogen, Nitrite	NP	P		
SM 4500 P E	Phosphorus, Orthophosphate	NP/P	NP		
SM 4500 P E	Phosphorus, Total	NP	NP		
SM 4500 S2 D	Sulfide, Total	NP			
SM 5210B	BOD, 5-Day	NP	NP		
SM 5310B	Organic Carbon, Total (TOC)	NP/P	NP		

Not all organic compounds are accreditied under NELAC
For methods with multiple compounds all compounds may not meet NELAC criteria, listing should be obtained from the laboratory
The lab carries additional accreditations with several states. This is the laboratories typcial listing but is subject to change based on the laboratories current certification standing.

Login Sample Receipt Checklist

Client: Olin Corporation

Job Number: 360-35962-1

Login Number: 35962

List Source: TestAmerica Westfield

List Number: 1

Creator: Beaumier, Janine E

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	N/A	
The cooler's custody seal, if present, is intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

TestAmerica Westfield
Westfield Executive Park 53 Southampton Road
Westfield, MA 01085
Phone (413) 572-4000 Fax (413) 572-3707

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information	Sampler: Brian Guichard	Lab PM: Mason, Becky C	Carrier Tracking No(s):	COC No:
Client Contact: James Cashwell	Phone: 9786586121	E-Mail: becky.mason@testamericainc.com		Page:
Company: Olin Corporation				Job #:
Address: 51 Eames Street	Due Date Requested:			
City: Wilington	TAT Requested (days):			
State, Zip: MA, 01887				
Phone:	PO #: REWI0013			
Email: beguichard@olin.com	WO #:			
Project Name: Olin Quarterly Groundwater	Project #: 36001816			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2SO3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - ph 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	LACH_107_06_1_B - Ammonia	6010B - Field filtered Al/Cr	2510B Spec. Cond., 300.0_28D SO4/Cl	Total Number of containers	Special Instructions/Note:
			Preservation Code:				S	D	N		
OC-GW-202S	8/24/11	11:10		Water	Y		X	X	X	3	MCP
OC-GW-202D	8/24/11	10:35		Water	Y		X	X	X	3	
OC-GW-25	8/25/11	10:55		Water	Y		X	X	X	3	
OC-GW-78S	8/24/11	9:00		Water	Y		X	X	X	3	
OC-GW-79S	8/24/11	8:15		Water	Y		X	X	X	3	
OC-PZ-16RR	8/24/11	7:15		Water	Y		X	X	X	3	
OC-PZ-17RR	8/24/11	9:50		Water	Y		X	X	X	3	
OC-PZ-18R	8/25/11	10:05		Water	Y		X	X	X	3	
~~OC-DUP1~~				Water	Y		X	X	X	3	
OC-PZ-24	8/25/11	8:25		Water	Y		X	X	X		
OC-PZ-25	8/25/11	9:05		Water	Y		X	X	X		

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1	Brian Guichard	8/25/11 12:40			8/25/11 12:38	
2		8/25/11 1400			8/25-11 1400	
3		8/25-11 16:05			8/25/11 16:05	TA

Custody Seals Intact: △ Yes △ No | Custody Seal No.:

Cooler Temperature(s) °C and Other Remarks: 0.1° C ice

09/09/2011